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Popular Woodworking

Issue #72 May 1993

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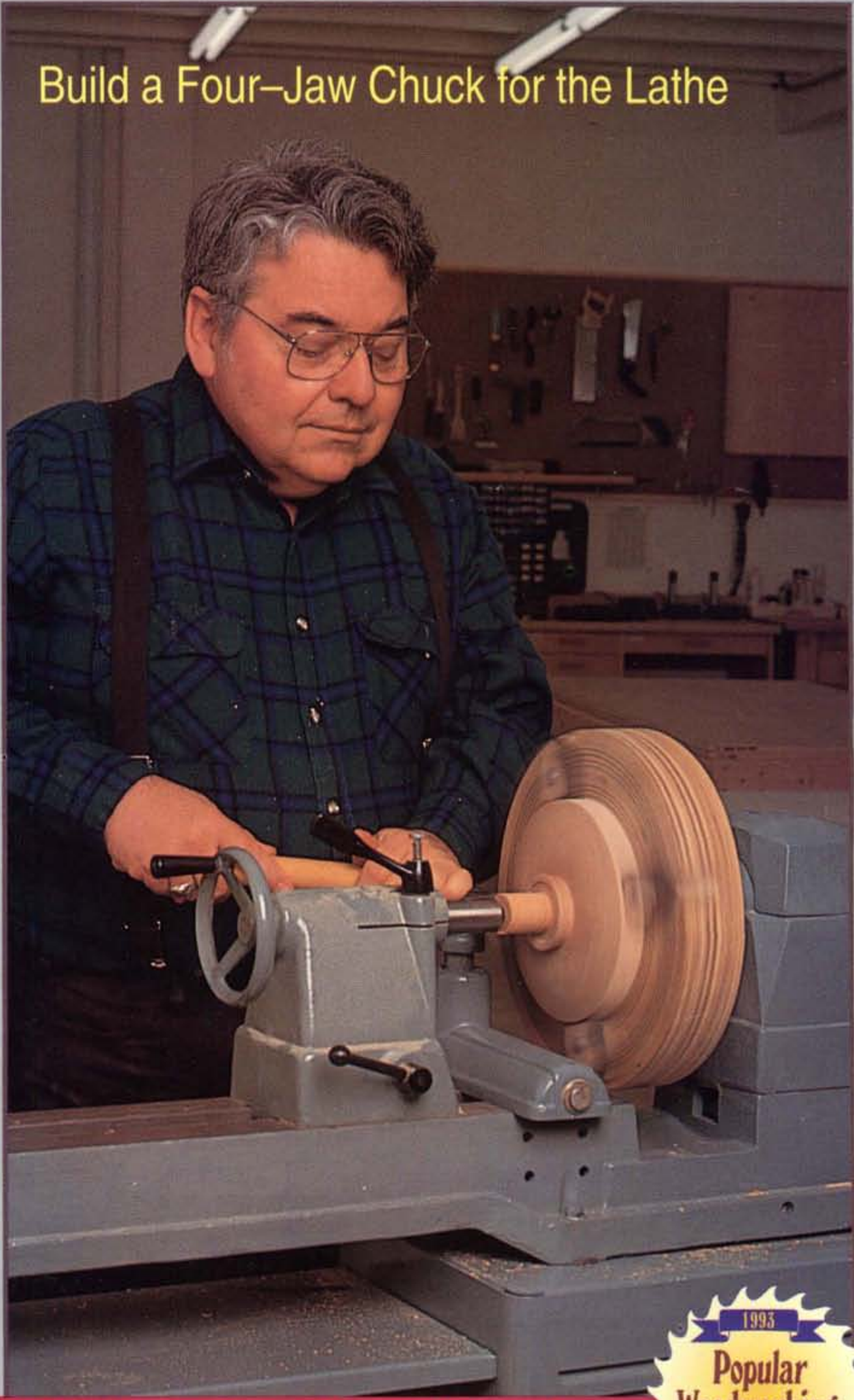

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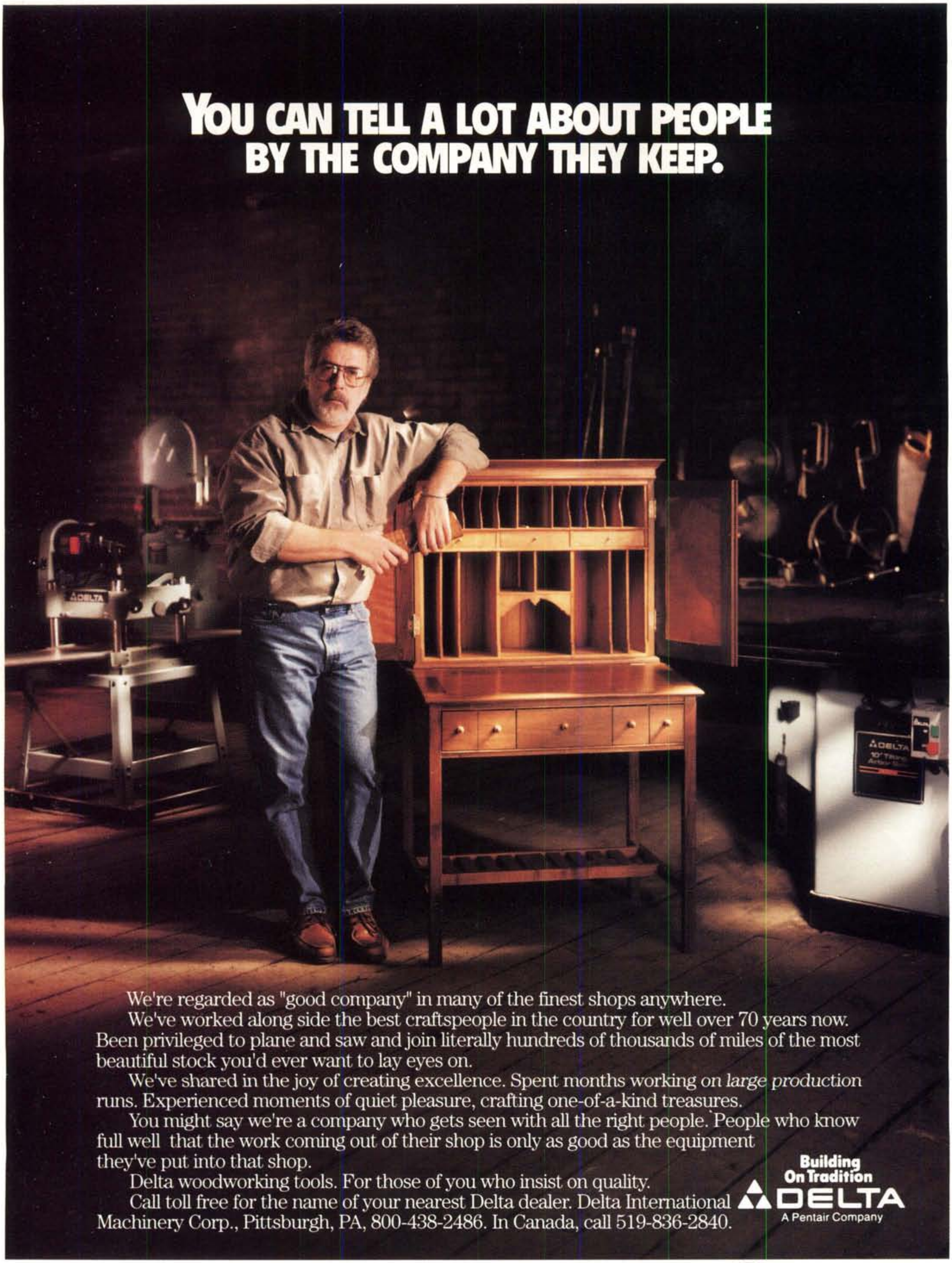
Tool Talk **reviews the winners!**

1993 Popular Woodworking Readers' Choice Awards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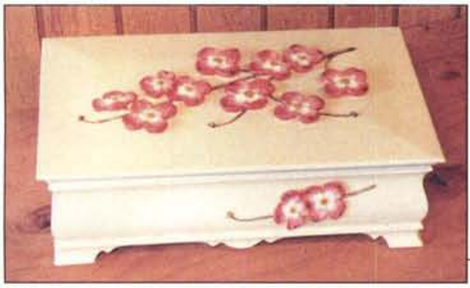

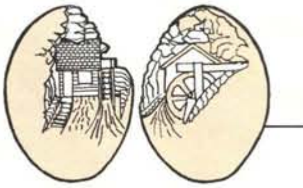

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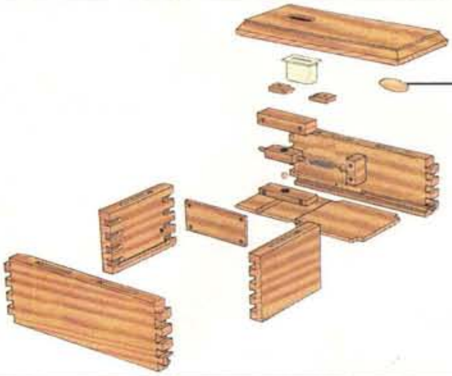

On the Cover

Ted Luiz, a retired oil company systems analyst from Concord, California, joined us in our shop to make Don Kinnaman's four–jaw chuck for the lathe. Ted said he hadn't worked wood in several years, but you wouldn't have known from watching him move around the shop. He keeps his skills honed making custom graphite fly fishing rods and tying hundreds of flies. Thanks for your help, Dad!

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Turnings

- The Readers' Choice Winners appear on page 86. Coordinating all of this was an incredible task. We received well over 3000 ballots—each with 100 tools to choose from. You do the math! I'd like to thank the following people for donating their time to count them all—Mandy and Liz, thanks kids, Grace, Wendy, Linda, and especially Marya who counted the most.

  We found that about 7% of you didn't vote for any of the candidates and quite a number of the ballots have only one or a couple boxes checked. The sliding miter saw category got the most votes, and drill presses the least. The largest single vote getter was Freud in the saw blade category.

  We're still on track to have the drawing on March 1st. The winners will be notified directly by the companies who receive their names. Good luck.

- The letters responding to Mr. Brooks (PW #70, Letters)—why work wood?—continue to pour in. This one fired up a whole bunch of you. The basic response has been, "because I can, and it makes me feel good." A really thoughtful essay on the subject came in and I'll be sharing it with you in Out of the Woodwork in a future issue.

- I hope you enjoy the mix of projects we've put together for this issue—we had a good time doing it. It's been panicville around here ever since we moved. Getting the shops in order so they could function as photo studios and continuing to put out the magazine has been a sleepless task for all of us—thanks everyone. I even persuaded my father–in–law to join us in the shop to build a project.

- Look for a new column in the next issue. I'll leave it at that, you'll just have to wait.

- Now for a more somber note. Scrap Solutions has been scrapped. It's been pointed out to us all too often that many of the entries and winners have already appeared in other publications. We don't have the resources to check each entry, so the best course to preclude any possible problems is to try someting else.

- To keep your mind and equipment turning, a little lubrication and some preventive maintenance go a long way.

Rob

Safety Note

Safety is your responsibility. The manufacturers place safety devices on their equipment for a reason. In most of the photos you see in *PW* these have been removed to provide clarity. In some cases we'll use an awkward body position so you can better see what's being demonstrated. Please don't copy us. Think about each procedure you're going to perform beforehand. Think ahead.

Letters

We welcome your comments, pro or con, about articles we publish. Send your letters to: Editor, Popular Woodworking, 1041 Shary Circle, Concord, CA 94518. Letters may be edited for publication.

More Beg, Borrow, or Steal

Some contributors have expressed concern over the mass reproduction for sale of their pieces. Some woodworkers who sell their work have copyrighted the pieces. In future issues we will indicate such with a note in the Table of Contents. You can reproduce the piece for yourself, family and friends. But let's don't show up at the flea market with several hundred copies.

—The Editors

Insurance Follow–up

Robert Hawkins of Denver, Colorado, sent us an article on crafter's insurance by Wil Turner. You can obtain a copy from the Editors, Sunshine Artists, USA, *1736 N. Hwy 427, Longwood, FL 32750-3410. Tel. (407) 332-4944. It was in the December 1991 issue.*

—The Editors

A Global Issue

In response to the article on the Old Oaken Lantern in the November issue by Frank Lucca, I too was inspired to make one. Everything went fine 'til I got to the globe. After three tries I finally got one cut, but it was a ragged job. While shopping at Walmart one day I spotted some kerosene lamp chimneys. There were 2 sizes. A large 10" and a smaller 6" size, for less than $5.00. My problem was solved. All I had to do was make two new posts for the 6" globe. I hope this will solve a problem for others.

Jim Benes
Perris, California

More Patterns, Please

I hope you can help me. I enjoy working with my scroll saw, and I can never seem to get enough patterns.

Recently on TV's Home Improvement I saw where they took a pumpkin and carved out a remarkable likeness of Bob Villa. When I saw this I thought, "what a great idea!" I could make similar patterns for my scroll saw! Then I saw a similar pumpkin on TV's Family Matters. Now what I want to know is, how did they get the patterns for those cuts? I've made side view silhouettes before but these were more like a 3/4 view of the face. Did they somehow use the negatives of a photo or what? I know that if they could do it with a pumpkin I can do it with my scroll saw. These would make great gift items. Can anybody help?

Randall Owen
Sparta, Illinois

Pass the Cigars

I am writing you in regards to your section on Letters in the #70 January 93 issue. "Bud Vase Inserts" from Paul Hyde of Corvalis, Oregon. I have found an endless supply of bud vase inserts from a friend that smokes cigars. The cigars come in a glass tube. My friend has given me over fifty of the tubes and I can get more anytime. Does Paul know of anyone like that. Perhaps he could ask at the tobacco shop or news rooms in his area. In fact any of your readers. I'll bet he could get cigar tubes from people by asking at tobacco shops or anywhere cigars are sold. You may want to pass this on to other readers. I need some help in obtaining some ideas for making bud vases. Where can they be found? I have used some of my own ideas but they don't hit my fancy as being the right thing to me. I am not in the cabinetmaking class yet in regards to woodworking.

Roger D. Sprague
Falconer, New York

Small Quarters

I love to woodwork, but I live in a small apartment—help.

Bruce Henson

See The Workshop Book *by Scott Landis, Taunton Publications.*

Puzzling Dimensions?

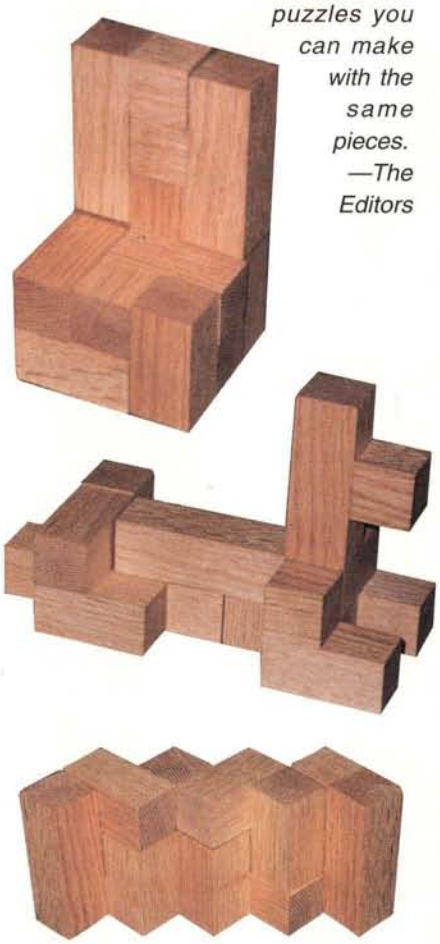
The Cube Puzzle by Harold McAleer was fun to make and only takes a few minutes to complete. However, it took even less time to see that part B should be 3" long, not 3½" as the Cutting List showed.

William Holstein
Sunriver, Oregon

You caught us again. We do appreciate it when you point out our errors—it pushes us to try and make this magazine accurate.

Harold McAleer wrote to tell us that he has received several calls about the puzzle. He doesn't want us to publish the solution—after all, a puzzle is a puzzle! If the puzzle pushes you to the limits of your sanity, write us and we'll send you the solution.

Here are some other puzzles you can make with the same pieces.
—The Editors



Makes Me Proud

Howard Gabriel of Hershey, Pennsylvania, wrote and enclosed a picture of his adaptation of our Roll Top Desk. It sure looks good. I hope your son–in–law appreciates the effort.

Mr. Blossom of North Merrick, Long Island is in the crafts business with his wife and son. A 72–years young retired machanic and machinist, he does 30 to 40 shows a year and spends 6½ days a week in his shop. WOW!

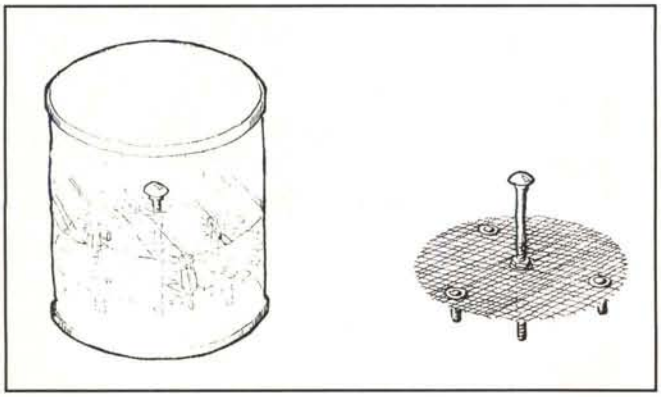
John Erickson of Topeka, Kansas built the Toddler's Chair from our article for his granddaughter then decided she needed a table too.

Tricks of the Trade

Tricks of the Trade shares readers tips for making woodworking tasks easier and safer. Send your original, unpublished ideas to Tricks of the Trade, ℅ Popular Woodworking, 1041 Shary Circle, Concord, CA 94518. We pay $25 for each trick we publish.

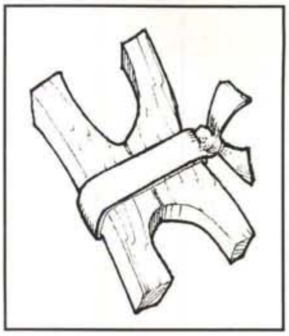
Resin Bath

At the end of each day I like to clean any router or drill bits I've used during the day. Mineral spirits have a tendency to split and crack my skin, so built this bit bath. Use a 39 oz. (no. 10) coffee can and 1/4" hardware cloth cut to fit the diameter of the can. Install three 1½" X 1/4" bolts around the perimeter of the screen for feet. Place a washer on the top and bottom of the screen and secure with a nut. Use a 6" X 1/4" bolt for the handle. Soak the bits overnight; then clean them up with a small brass brush.



Tom Lavallee
Salmon, Idaho

Surgical Clamp



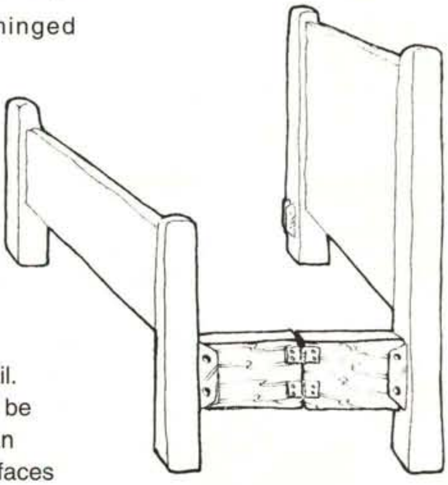
After visiting my doctor for a blood test, I bought a flat rubber tourniquet like the one he used. I use it to clamp odd shaped pieces. The rubber is tough, clamps well and doesn't slip when knotted.

Alice & Robert Tupper
Canton, South Dakota

Bed Finishing Helper

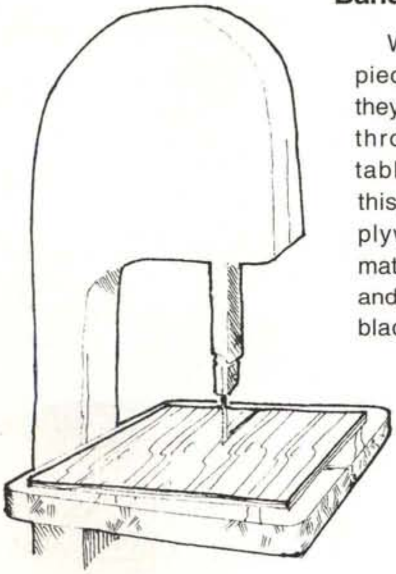
This short, hinged bed rail lets you varnish the head and foot boards without taking up a lot of room space.

A half set of rail ends is surface mounted to a 12" hinged rail. The bed can then be opened so you can access all the surfaces while you finish.



Alice & Robert Tupper
Canton, South Dakota

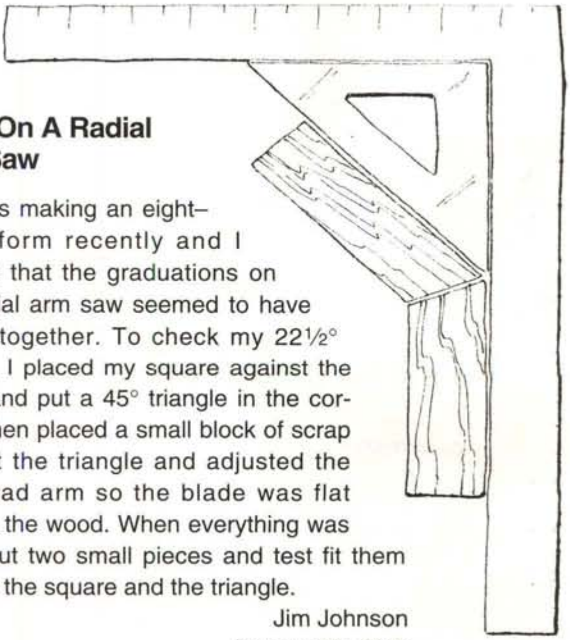
Band Saw Aid



When cutting small pieces on my band saw, they would sometimes fall through the gap in the table insert. To prevent this, I cut a piece of thin plywood to the approximate size of the table top and fed it half way into the blade. An out of the way clamp secures it to the table. The small slit in the top also makes it safer for your fingers.

John Schluttenhoffer
Earl Park, Indiana

22½° On A Radial Arm Saw



I was making an eight–sided form recently and I noticed that the graduations on my radial arm saw seemed to have grown together. To check my 22½° setting, I placed my square against the fence and put a 45° triangle in the corner. I then placed a small block of scrap against the triangle and adjusted the overhead arm so the blade was flat against the wood. When everything was set, I cut two small pieces and test fit them against the square and the triangle.

Jim Johnson
Brunswick, Ohio

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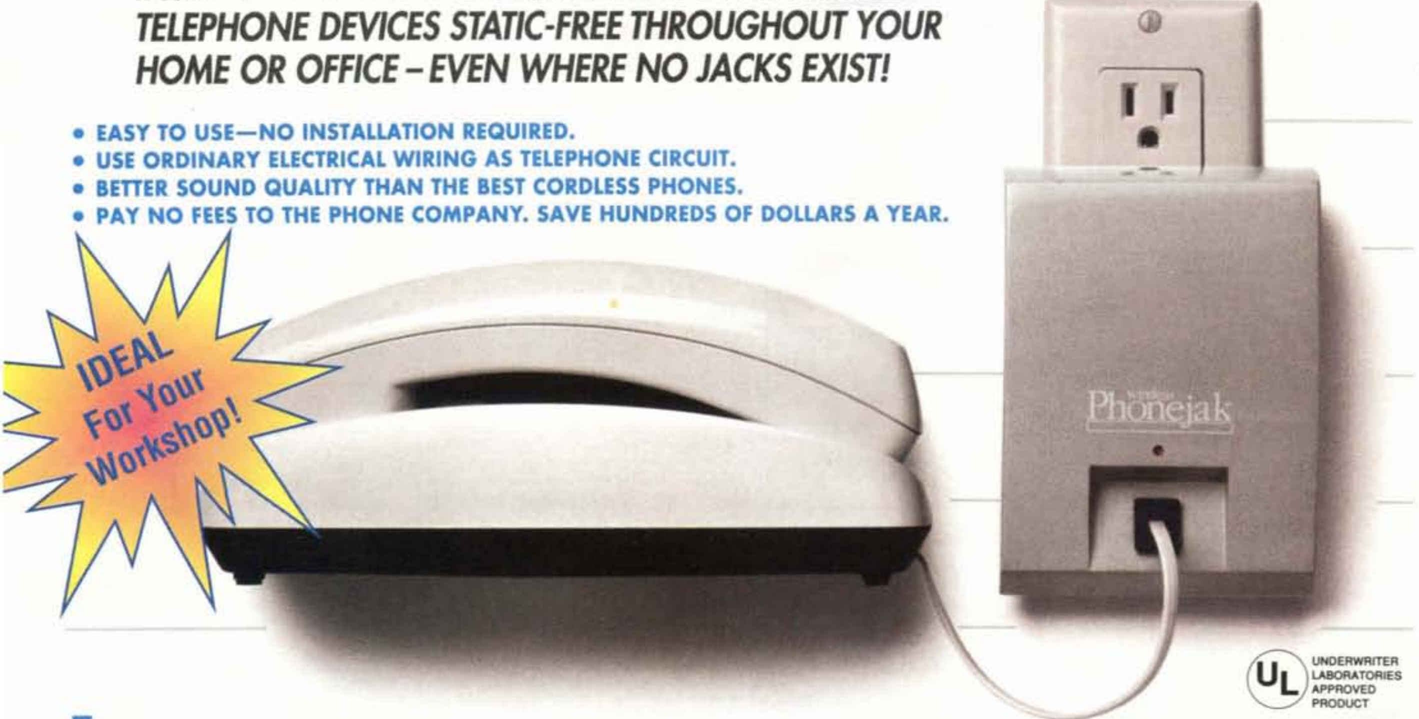

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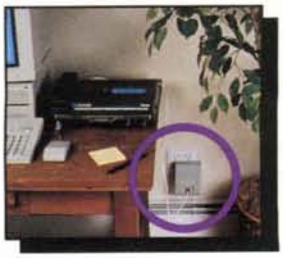

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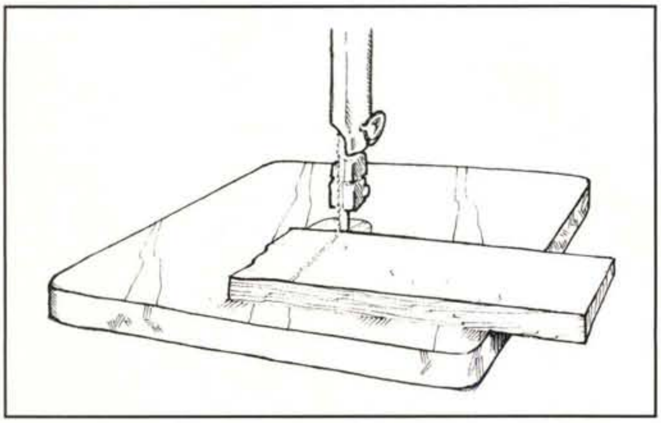
Quick Reference Cut Line

Use your band saw to square a line to guide your cut. First, make a small cut into the edge of the piece at your mark. Then stand the work on edge and use the first cut as a guide to score the face of the board. Lay the piece flat and follow the scored line to make your cut. If you need to cut the piece at an angle, first score the face as above; then adjust the table to the desired angle.



Alice & Robert Tupper
Canton, South Dakota

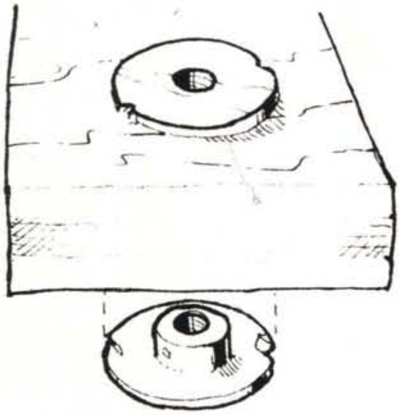
Reversible Workbench Top

Because I'm 6'4" and find standard benches too low, I built a custom bench to a more comfortable height. The top has two layers of ¾" plywood. The bottom layer is nailed down, but the top layer is secured with screws. When the top becomes too damaged to use, pull the screws, flip the plywood over and fasten it back down.

George Earley
Mount Hood, Oregon

T–Nut Bearings

I make several whirligigs every summer and have found that T–nuts make excellent bearings for the propeller shaft. Use one on each side of the hub. The threads will hold a little grease for lubrication, or you can drill them out for a smooth bore.



John Reinhold
Desert Hot Springs, California

Free Kneeling Pads

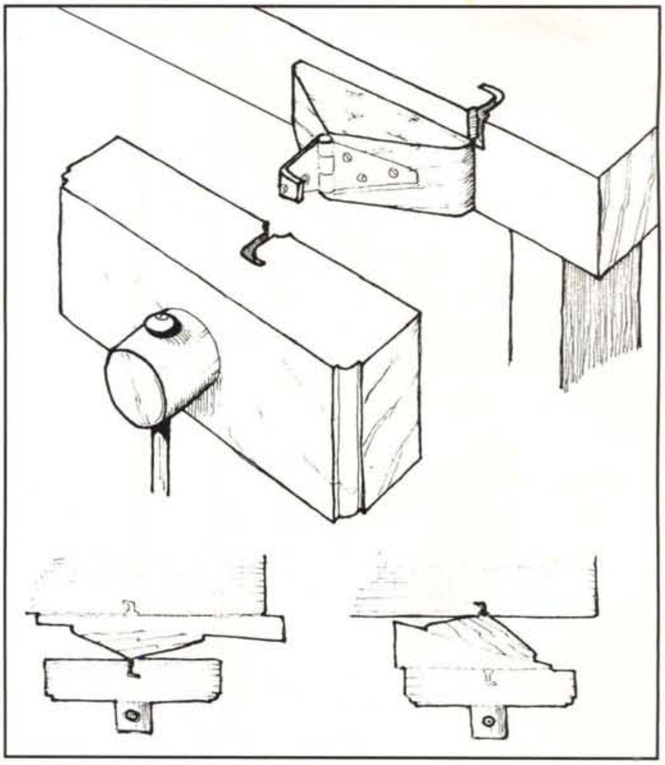
Check your office mail room for those large bubble–lined envelopes. Stuff one with regular bubble wrap and give your knees a break.

George Earley
Mount Hood, Oregon

Tapered Gripper For The Bench Vise

A small block of hardwood with an ordinary strap hinge attached makes a useful addition to your bench vise for working on tapered pieces such as table legs. Cut matching slots in the head and table so the hinge will fit on either side. When you open the vise, it won't fall to the floor. For a little extra holding power, contact cement a piece of inner tube to the face of the block.

John Cameron
Mississauga, Ontario



Editor's Note

We receive a lot of photocopied submissions to Tricks of the Trade. Most often, our name and address have been written in by hand. My guess is the submission was also sent to all the other woodworking magazines. Nobody wants to buy a tip, then see it published elsewhere. In the future, all photocopied submissions will be filed in the circular bin. Sometimes we'll buy a tip, then see the identical idea in one of the other publications, but by another author. Those things do happen—after all, there's nothing new under the sun.

Four Easy Ways to Turn Your Hobby into Cash

"My hobby makes me $300 a week, part time. Yours can, too!"

by Amy Gundaker

I'll never forget the look on my husband's face the day he came home and said, "Amy, I lost my job!" I thought my heart would break. After years of working as a meat cutter in Erie, Pa., Rick became a victim of the poor economy in our area. After four months, he found a new job, but it paid less and had fewer benefits.

The bills were piling up and the bank was threatening to foreclose on our home. Things were going from bad to worse. We desperately needed a second income, but with three small kids and one old car, HOW?

That's when I turned to the only thing I knew and could do from my home, my craft and hobby.

When I first started, my income was small, but time and experience helped me develop four successful selling methods and my income grew beyond my greatest dreams.

Today, Rick and I live in a nice country home on ten acres of land and it's paid for!! That's a great feeling, *but the best feeling of all is the self satisfaction I have in being able to make the extra money I need whenever I need it.*

You, too, can change your life as I did. I would like to share with you my four successful methods of turning your hobby into the extra money you need for those everyday bills.

The best thing about my four methods is: You name your own hours, work as hard as you want, and quit whenever you please. *No set hours, no boss and it's 100 percent your own.*

►Shirley, a friend of mine from Union City, PA, had the same problem I did. Small children, a household to run and lots of bills. Even though her craft, sewing and quilting, was different than mine, I showed her my four successful methods, and they worked for her, too!

Using method No. 3 detailed in my guide starting on page 69, she now works part time on a table set up in a spare room in her home. Shirley averages up to $775 a month.

I helped others, too...

►Gail from Muncy, PA, writes:

"The crafts I make sell for $1.00 to $75.00. I am averaging from $400 to $600 a week, and I'm booked six months ahead. Thanks to your help."

►Matt Hanes from Santa Ana, CA, writes:

"After looking your guide over, I put it away. To me, it seemed too easy to be true. I finally tried it out about six months later, and am I glad I did!

"During the past year and a half, I've made enough money from your craft marketing ideas to purchase a $98,000 log cabin in a local resort area. I did this in my spare time."

I know this is exceptional income, but that's what's nice about my four methods. You can earn as much as you want using one, two or any combination of my money making methods. You can go as far as you want — *your income is virtually unlimited!*

There's plenty of room for everyone. I won't be competing with you and you won't be competing with me.

That's why I would enjoy showing you how you can turn your own craft into a profitable home-based business.

I put all four of my successful money-making methods into one fact-filled guide. Following my easy step-by-step instructions and using your basic craft making skills, you can make the extra income you always dreamed of.

I'll show you...

- How to find a profitable craft if you don't have one.
- How to begin with a small amount of money.
- How to make money without leaving your home.
- How to determine your selling price.
- How to give your crafts that personal touch that will increase sales by 80%.
- How to choose the designs that sell.
- How to avoid the mistakes that I made... and save hundreds of dollars.
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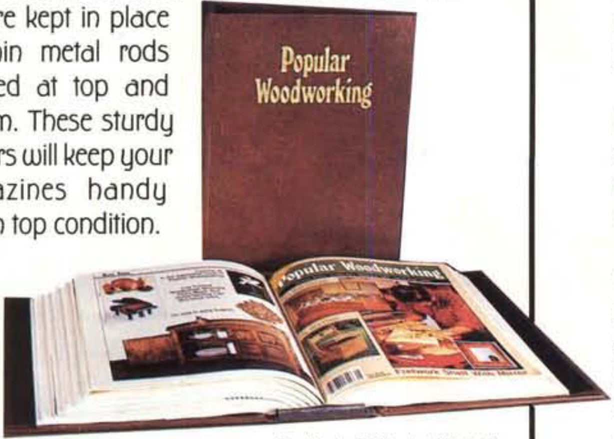

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The Finishing Forum

Lye–Stripping Problems

I refinished 26 shutters for a customer whose home was built in 1820. They're the original shutters. Sometime after 1950, they were dip–stripped in lye; then painted. My problem is the paint won't adhere. It looks nice for awhile; then peels. The owner wants me to sand them down and paint them with milk paint he got in Williamsburg, Virginia.

My questions are: could the lye have soaked too far into the wood and/or it wasn't washed properly after stripping? Is it possible to seal the wood somehow to help the paint hold better? What's your opinion on the use of milk paint?

Any information you can give me would be most appreciated—he wants it done by spring.

Donald J. Lee, Cressona, PA

It's not likely that lye from stripping would penetrate very far into the wood unless the shutters were soaked for a long time. Any residual lye could cause a problem—a surface deposit would saponify an oil or varnish film to form a soap film on the substrate and greatly reduce adhesion.

If the presence of caustic is indeed the problem, it could be mollified by exposing the bare wood and washing the shutters with white vinegar to neutralize the alkali. The shutters would then have to be thoroughly washed and rinsed with water to remove any soluble salts.

If the surface is rendered neutral, there's no need to seal in the contaminant. There is, however, the possibility that exposure over the past 173 years could have resulted in a delignified surface or other manifestation of wood deterioration. If that's the case, treating the surface with a penetrating sealer such as tung oil sealer or a very thin, long oil varnish would be in order. This will reestablish an adhesive binder in the weakly bound surface.

Traditional milk paint based on casein binder has not proven to be very successful as a coating for wood subject to exterior exposure. Even when modified with drying oils, or other resins, milk paints lack the distensibility to accommodate the lack of dimensional stability of wood.

If your client is referring to the Milk Paint Reproduction paints endorsed by the Williamsburg Foundation, they're not true casein paints, but acrylic latex paints made to imitate milk paints. They're produced by the Stulb Paint & Chemical Co., Allentown, PA. Contact them to be certain they're proper for use on exterior wood trim. They may want to offer another one of their products specifically formulated for your end use. Also ask for primer recommendations.

Properly formulated acrylic latex paints aren't a bad choice for your project. It's important to remember that such paints perform well only if they're applied when the ambient temperature is steady during the entire drying period. Temperatures under 50° and over 85° F. are suspect; that includes surface temperature, not just air temperature.

Dick Fitch

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Book Reviews

Fine Woodworking Design Book Six, 186 pages, paperback, $25.95, available from Taunton Press, 63 South Main Street, Box 5506, Newtown, CT 06470–5506.

It is here much sooner than I thought it would be, and like its five predecessors, it's really quite an incredible volume. Sandor Nagyzalanczy, managing editor of *Fine Wood working* magazine and incumbent judge of the entries, spells out the differences between this and previous volumes in the Design Book series in his introduction:

"Woodworkers, both professional and amateur, seem to be paying more attention to developing well–proportioned forms, as well as integrating the details of a piece rather than just tacking them on. The results display more innovative edge treatments, motifs, surface decorations, finishes and hardware. These pieces show a greater confidence and command of both visual and technical ability than I've seen before."

About 8,000 photographs were sent in to be considered for this 1992 volume. Of these, about one finalist was selected for every 32 images received to make up this journal of some 266 full–color photographs.

The selections, states editor Nagyszalanczy, were not made on the basis of which of these pieces would look good in our living rooms, but on the basis of technical merit. It's obvious that woodworking is alive and well in America—and in the world.

The cabinets are incredibly beautiful, even the ones you don't particularly like, and worthy of their place in the book. The chairs and benches are another story. While they all may be technically wonderful, their attributes for comfort are suspect. Each piece—tables, boxes, chests, desks and beds—are works of art that should be appreciated as works of art, and not necessarily for their function in the average household.

One section, "Sculpture & Carvings," presents some interesting *objet d'arts*, as does the section of turnings. The "Accessories & Musical Instruments" section presents ideas that will challenge your best woodworking abilities.

The book closes with a lengthy and masterfully written essay on woodworking apprenticeship by Scott Landis. The essay gives us a fascinating picture of the business of apprenticeship—past, present, and future in Europe, Asia, and America. The unstated premise of the writing might be that these apprenticeships are more likely to keep the art of woodworking design and craftsmanship alive than is studying books like these. Even so, the love of the craft is clearly apparent in each of the pieces presented in this collection.

It may be worth noting that the book is of exceptional quality; the color printing was done in the United States, and the pages appear to have been sewn in signatures rather than just glued together.

Certainly this is a volume that will withstand the amount of use that you're sure to give it and still last a long, long time in your collection. With the other Design Book volumes, Number Six clearly exemplifies the state of contemporary woodworking, so it belongs in the library of every serious woodworker as well as on their coffee tables.

Making Rustic Furniture: The Tradition, Spirit, and Technique with Dozens of Project Ideas by Daniel Mack, 160 pages, hardcover, $24.95, available from Sterling Publishing Co., 387 Park Avenue South, New York City, NY 10016-8810.

"If you can peel an apple, you can make a rustic chair," says this book's author and renowned rustic furniture maker. With no previous woodworking experience and a few basic hand tools, anyone can make rustic furniture for the cost of a few nails, a walk in the woods, and this book.

This introduction to the least expensive and most accessible woodcraft—making furniture from twigs, sticks, logs, driftwood, and scrap lumber—is presented in hundreds of both color and black–and–white photographs that display the rich traditions and the vast stylistic range of past and contemporary rustic furniture.

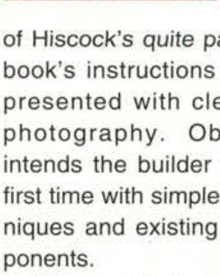
Once through the colorful pages of photographs of numerous rustic pieces, the book makes a logical progression to how to make your own. With clear and large photos, this section covers the best places to find the wood you'll need—fresh–cut, driftwood, fallen wood and wood pile—how to prepare the wood for twisting and bending, the simple hand tools required, and rustic joinery. The "how–to" is followed by several easy–to–follow projects.

Anyone who is bent on creating a unique piece of furniture will surely enjoy this old/new twist to wood working.

Make Your Own Electric Guitar by Melvyn Hiscock. Blandford Press, 155 pages, distributed by Sterling Publishing, 2 Park Ave., New York, NY 10016–1986, $9.95.

It may not be a Fender or a Gibson, but with a little patience and a song in your heart, you can make your own electric guitar with this book.

Although Hiscock's guitar plans may appear deceptively simple, and these guitars don't begin to compare in complexity to the classical models, this is no novice project. Even so, as a direct result of Hiscock's *quite* painstaking care, the book's instructions have been simply presented with clear, step–by–step photography. Obviously Hiscock intends the builder to get it "right" the first time with simple woodworking techniques and existing ready–made components.



From preliminary design to wiring and plugging it in, the book is complete by Hugh Foster

right down to its appendix of addresses for specialist suppliers. However, the directory may be the book's weakest feature because many of the addresses are in England (it is an English book—what can we expect?) It would be a great service to North American crafts people if the list were augmented with North American suppliers.

Make Your Own Electric Guitar is a nearly perfect example of its type. It fills a need, is well illustrated with hundreds of photos and drawings, and is written in a lucid and friendly tone. This book is a dandy.

The Timber–Frame Home: Design • Construction • Finishing by Tedd Benson, 234 pages, paperback, $19.95, available from The Taunton Press, 63 South Main St., Box 5506, Newtown, CT 06470–5506.

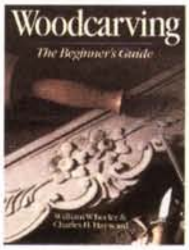
Here's something different. Usually this column reviews relatively small woodworking projects that can easily be completed in your spare time. But this time the project is just plain *large*—a timber–frame home that may take more of a commitment than just a little extra time—but what a reward!

The instructions are excellent and the photos are terrific. By the time you've finished reading the book, you'll wish you lived in the house. If you have the time and patience, a bunch of good, handy friends, a sizable chunk of spare cash (or a very friendly banker)—you'll have all you need to build and even live in this project.

Floor plans and construction techniques abound here. Beware, browsers, you're all but certain to want a copy of this house, much less the book.

Woodcarving: The Beginner's Guide by William Wheeler and Charles H. Hayward, 128 pages, paperback, $9.95, available from the Sterling Publishing Co., Inc. 387 Park Avenue South, New York, NY 10016–8810.

You don't have to be a novice woodworker to be a beginner carver. And even if you're a seasoned woodworker, you can learn to carve and make your woodworking projects even more appealing. But the problem is that most non–carvers just have no idea where to begin a carving project. Wheeler and Hayward's book might be just the answer you're looking for to both those questions.



Originally published in 1972 in England, the treatment is slightly dated yet very fresh. A brand new publication might be slightly better illustrated, but it would certainly be no less thorough. The authors include nearly 250 illustrations (the publisher only claims about 180) as they discuss tool and timber selection, relief and three–dimensional carving, and lettering.

The sections on project layout and design couldn't be any better. The classic, ever–handsome acanthus leaf is here for relief carving. Seeing the plan, it's easy to see why this is a popular pattern. The authors' roundel is another particularly attractive pattern. Architectural carving and sculpting also are discussed. The best discussion may be about carving letters. Signs made this way are certainly more attractive than signs that have been simply cut out with a router. A chapter about sharpening makes it possible for even beginning carvers to sharpen their own tools.

If you have set of carving tools that haven't been used in awhile, this book will make you want to get them out, sharpen them, and include some carving in your next project. PW

***Hugh Foster** is an English–teaching woodworker in Manitowic, Wisconsin, and the author of* The Biscuit Joiner Handbook *(Sterling Publishing, 387 Park Ave South, New York, NY 10016)*

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Outdoor Lidded Bench with Norm Abram, ©1991, WGBH Educational Foundation, 125 Western Ave., Boston, MA 02134, (800) 272-0280, $24.95, 30 minutes.

Many readers will be familiar with the public television program "The New Yankee Workshop" as hosted by Norm Abram. This video was a pleasant first acquaintance for me with that popular series and I thoroughly enjoyed both it and a second episode, also reviewed here.

Mr. Abrams uses cypress for this piece of outdoor furniture, a squarish, shallow, high–backed wooden wing chair/storage chest with a removable seat. A complete measured drawing and a list of materials for the project are available by sending a check for $7.50 to: The New Yankee Workshop, "Outdoor Lidded Bench," The New Yankee Workshop, P.O. Box 9345, South Burlington, VT 05407-9345.

The program begins with an intriguing search for submerged cypress and pine logs along an unidentified river, lost on shoals a hundred years or more ago, gathered up today by persevering southern Georgian entrepeneurs, and milled and dried in Florida. Just why these should be considered superior to cypress logs freshly cut and never water–soaked is never satisfactorily explained, however.

Back in the shop, Abram prepares cypress boards for glue–up panels and uses resorcinol resin because it is proper for outdoor joinery. Additionally, because it is a piece of outdoor furniture, he uses stainless steel screws and a type of plywood called "MDO." Apparently it is used for exterior signs and is suitable for painting because it has a smooth, weatherproof paper veneer sandwich that ends itself to painting.

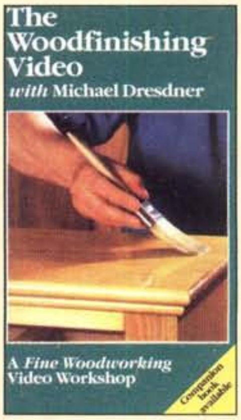
Though cypress, sees very little use in many parts of the country, it apparently is as weather–resistant as the redwood or cedar more commonly used in many areas.

The project demonstrated is a simple, rather primitive piece held together with cleats, galvanized nails, and screws, but it does appear like it will last and does seem adequate for its purpose. On a scale of difficulty from one to ten, it gets a three.

Child's Wagon, ©1992, WGBH Educational Foundation, 125 Western Ave., Boston, MA 02134, (800) 272-0280, $24.95, 30 minutes.

Alan Marks *designs and builds furniture in Carmel Valley, California*

The Woodfinishing Video with Michael Dresdner, ©1992, Taunton Press, Box 5506, Newtown, CT 06470-5506, (800) 888-8286, $34.95, 40 minutes



How can the topic of wood finishing be adequately covered in forty minutes? The answer is it can't, which may explain the necessity for Michael Dresdner's companion book to the video of the same title.

This tape deviates from the standard Taunton presentation format, in which an expert professional shows us how he operates. In this one, Dresdner, himself an expert finisher, interviews three other finishers. Each of them represents a totally different approach, ranging from the less complex in terms of skill and equipment to the most demanding.

What you will learn is through demonstrated methods used by the three New England finishers, starting with Allen D. Androkites, a Shaker box–maker who wipes on his finishes, including oil and shellac undercoats, stains, Danish oil and wax, and water–based polyurethane.

Chris Minick then demonstrates a brushed–on polyurethane finish. He shows how to precondition pine to take an oil–based stain. This eliminates blotchiness and is well–worth knowing. His contribution to the video is a gold mine. You can actually see the proper way to brush on a finish. Minick also donates his solution to a major problem with paint cans — the rims fill up with excess paint which makes refitting lids a messy proposition. His method: punch three or four holes in the bottom of the rim with an awl to let the excess continously drain back into the can. Dresdner lends Minick a hand with some touch–up work, twice imitating knots to cover putty and hide a defect. Minick's demo covers the entire finishing process, including clean–up of brushes.

The third finisher, Williard Martin, builds harpsichords. He paints them with floral designs and solid borders that mimic veneer, and he demonstrates a technique for using glazes to accomplish the latter. His major contribution to this video, however, is in the realm of spray–finishing, and we watch an acrylic finish being applied to one of his creations as a final demo.

You will not learn very much from the video about finishes themselves, their ingredients and classifications or their comparative strengths and weaknesses. All of this is covered in The Woodfinishing Book (Taunton, $24.95) which deserves more than a few words.

Judging from the book–cover, you might expect to find clear explanations of finish types, usages, and composiby Alan Marks

This is a project you can really get your teeth into. First of all, it is quite complex (seven on my one–to–ten scale) and secondly, since you are likely to be making it for one of your children or grandchildren, not only do you get to indulge in the guilt–free luxury of lavishing copious amounts of time on it; you get to delight a youngster to boot. Its rugged oak construction suggests that it will become a treasured family heirloom and, should it not, you are at least assured a permanent niche in the child's memory for having produced it.

The design took shape after Norm Abram found a wagon in the Strong Museum in Rochester, New York that piqued his imagination. He liked the proportions, he says, but otherwise his version bears little resemblance to the source of his inspiration.

It uses standard hardware and a half–inch bottom of the "MDO" plywood mentioned in Abram's "Outdoor Lidded Bench."

Its antique appearance derives largely from the varnished, removable stake–and–slat sides that socket into place and the red paint with which he coats the wagon proper. There are many metal pieces, including aluminum channel, threaded rod, fender washers, nuts and bolts, and all used in its construction appropriately enough and in a way sufficiently clever to delight the mechanically–inclined among us.

Plans and a material list really are a must if you want to do the project right, and they are available by sending a check for $7.50 to: Norm Abram's New Yankee Workshop, "Child's Wagon" The New Yankee Workshop, P.O. Box 9345, South Burlington, VT 05407-9345. PW

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tions in the book that can be confusing terminology used by manufacturers. You might, however, end up just as confused as when you started. Even so, you'll come to understand the materials finishes are composed of and how to identify them. With all its tables and descriptions, the book will serve as a reliable reference work should you ever need to know which finish might be appropriate for any given application. Maybe that's the most to be expected, considering the complexity of the subject.

Otherwise, you will find much to remember in this outstanding book. The other informative chapters discuss, with complete clarity, and with a modicum of wit, such important matters as caring for your brushes, choosing auxiliary finishing materials and tools, spray equipment, and respirators, strippers, refinishing and wood preparation. The list goes on and on—damage repair, rubbing and polishing, applying top coats, wood coloring—all up–to–date, practical information. PW

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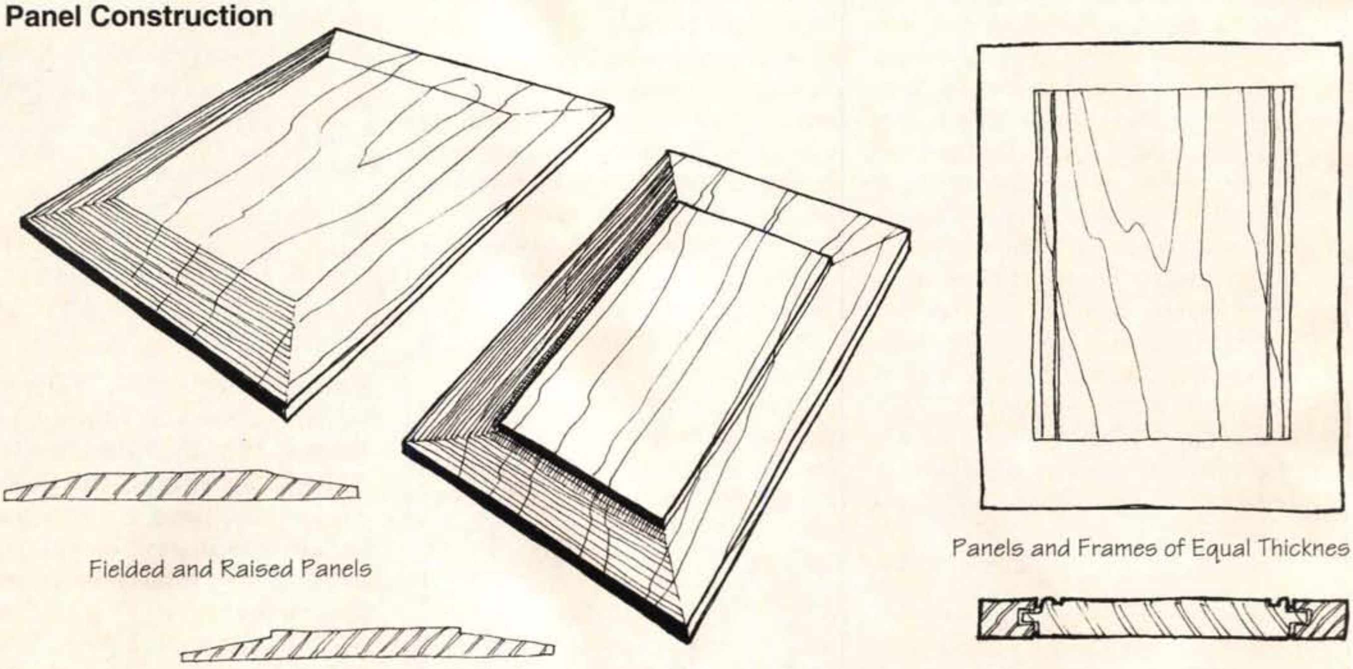
Tried and True

Panel Raisers & Badgers

Panel Construction



Fielded and Raised Panels

Panels and Frames of Equal Thicknes

Many of the machines we use in our shops today were developed to speed up existing procedures. Early on it was discovered that machines made new methods of work possible—methods that weren't practical to do with hand tools alone. As a result, basic shop procedures for stock preparation and various joinery operations changed to reflect what machines do best. Certain techniques, once a common part of every woodworker's vocabulary, became less used or abandoned in favor of a more practical approach.

Materials like MDF (medium density fiberboard) and techniques such as biscuit–joinery, make certain procedures obsolete from a structural point of view. A good example is frame–and–panel work—developed to solve the problem of creating large, stable areas, using small–sized components. Frame–and–panel work includes a host of specialized techniques—mortise and tenon joinery, mitering, coping, mouldings, panel–raising and ornamental fielding. None of this is structurally necessary when you use sheet materials and biscuit joinery. But since structure isn't everything, these earlier techniques are still quite often practiced for stylistic reasons.

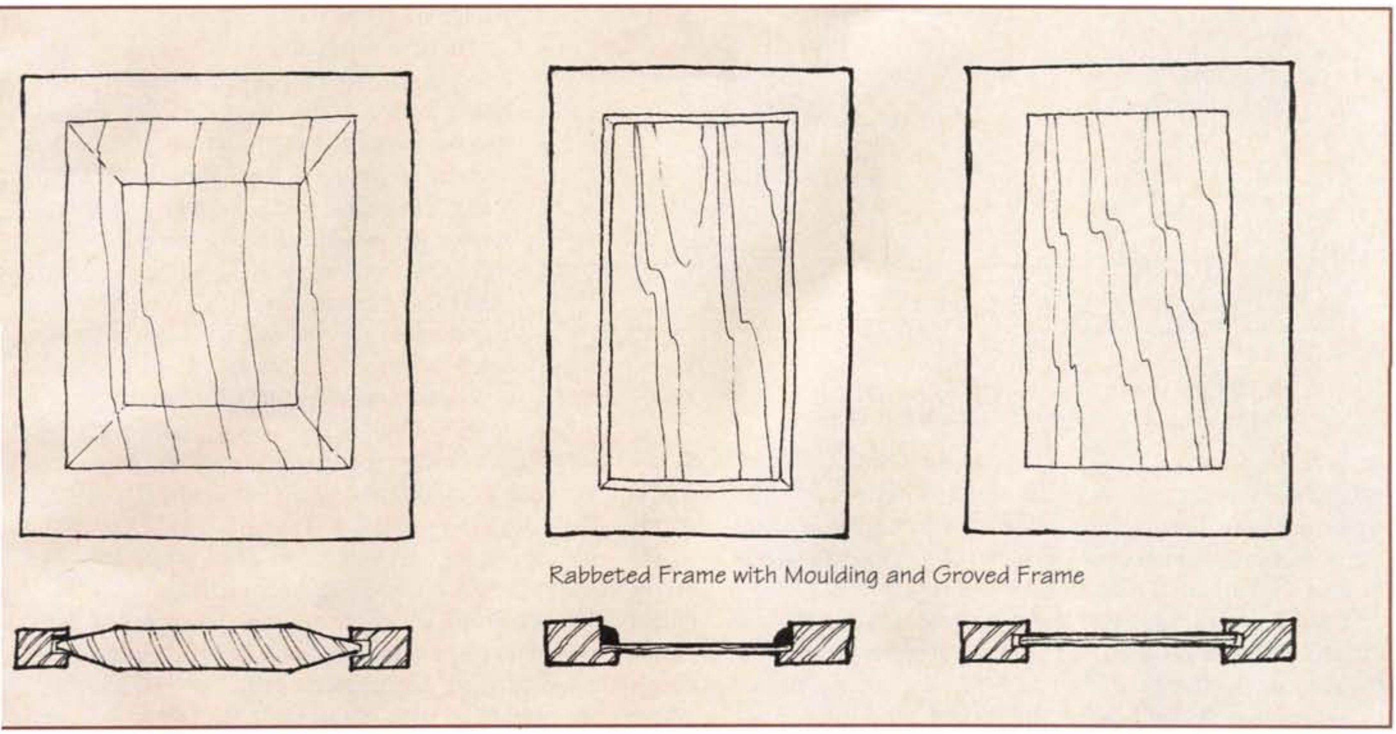
A somewhat perverse situation can arise when we attempt to duplicate the earlier methods with more modern tools. Instead of the job being easier, we're often forced into complicated and inefficient contortions when we try to produce something that's more easily done with the hand tool originally designed for the job. Making raised panels is a good example. Assuming everyone has a table saw—and often little else—complicated jigs and time consuming procedures have been developed for the woodworker to make fielded panels of dubious quality. Far better work can be produced more easily, efficiently, quietly, and safely using traditional hand tools. Such tools include common items like rules, awls, gauges, and squares, and various wooden planes that might not be familiar, but are not impossible to find.

***John Watson** makes furniture and writes about woodworking in Inverness, California.*

Panel Raising and Fields

A panel is a piece of wood held in a frame. Sometimes the panel is constructed of several pieces glued together to produce the required area. The virtue of frame–and–paneling is that, while the panel is securely held by the frame and won't fall out, it remains free to expand or contract without damage to itself or its retaining frame.

The panel may take various forms. It can be a simple perfectly flat rectangle, or it can be curved or irregularly shaped both in outline and in cross–section. Some panels are held in the frame by fitting onto rabbets and kept in place with applied moulding. A more common method is to fit the panel into grooves cut in the inside edges of the frame. Although the panel may be no thicker than these grooves (like dust boards in good quality cabinet construction), very often the by John Watson


Rabbeted Frame with Moulding and Groved Frame

panel is the same thickness as the frame. In order for it to fit into the grooves in the frame, its edges must be thinned. Sometimes this is achieved by forming a rabbet or a tongue around the edge of the panel and sometimes by tapering or canting the edge—often in combination with a tongue.

Forming a tongue around the panel is neater—it results in a continuously flush surface between frame and panel—but can present a problem if the panel shrinks. An unsightly gap can appear around the edges of the rabbet that forms the tongue if that happens. It can be disguised somewhat by running a bead around the rabbet so that any gap looks like the quirk forming the bead. This effect can become disproportionate in large panels. A better method is to form long, sloping sides to the panel so any changes in the panel's dimension are not easily seen.

How the sloping sides of the panel are made determines the form of the panel's central portion. When this is a clearly defined area, the panel is said to be *fielded*. If the field is defined, the panel is said to have been raised. The borders may be no more than a sharp arris marking the point at which the flat central portion starts to slope by a step–like border, or by a small rabbet (called a list). Both have the effect of elevating the field.

Panel raising is not quite the same thing as fielding a panel, although the primary purpose of both is the same—to fit the edges of the panel into the frame.

Panel Raising By Hand

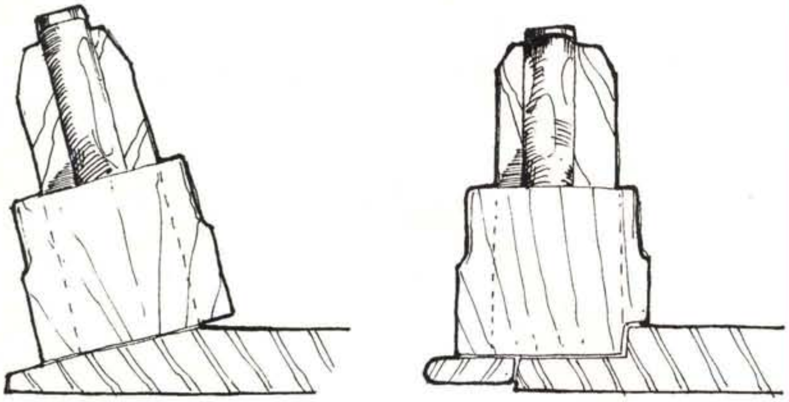
You can construct jigs to feed panels on edge through a table saw to form the necessary taper, and there are shaper cutters available that form similar tapers. Both methods can be unwieldy when working on large panels, and both produce tapers that require additional clean up after machining.

Using a badger or panel plane designed to work panel edges is a far easier proposition. The work, no matter how large or small the panel, can be secured on the bench. The shape, size, and proportion of the taper can be adjusted as desired. The size and profile of any step necessary to raise a fielded panel can be controlled. And the surface left by a properly tuned plane is ready for finishing and should require no further preparation. All of this can be done with a minimum of sawdust, and without the necessity of wearing masks, goggles, or earplugs. The woodworking experience is far more pleasurable and it doesn't consume electricity.

Panel Planes

The term *panel plane* can apply to two distinct types of wooden planes: a medium length bench plane used for truing and smoothing, and the panel plane, designed specifically to work the sloping rabbet around a panel.

With a little effort and the prior use of a rabbet plane or plough plane, a regular jack plane can be used to form a



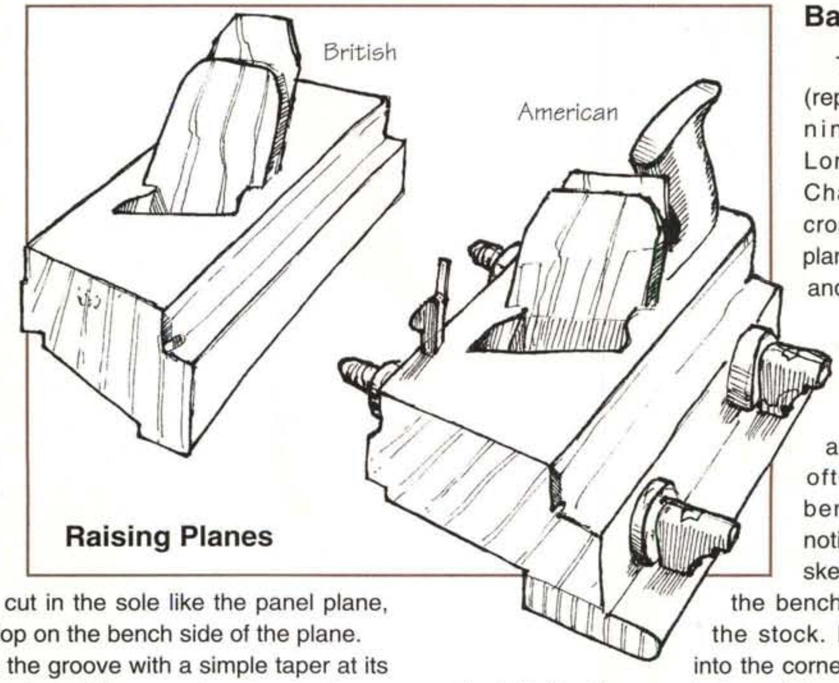
The jack plane can field a panel, but a panel plane with a rabbeted sole and fence is better suited.

fielded or raised panel. A panel plane is better suited for working a wide, flat, or sloping rabbet since its sole is made with a rabbet along the bench side that allows the cutting iron to work right up to the rabbet to form the raised field.

Some panel planes may have a removable fillet that fills in the rabbet cut in the sole, thus turning the panel plane into a regular jack plane. Others may be fitted with fences attached to the bottom of the sole to control the width of the cut. Almost any panel plane can be provided with user–made versions of these refinements.

Raising Planes

A more sophisticated variety of wooden plane used to field panels is known as a raising or fielding plane. These planes are generally shorter than panel planes. They're fitted with adjustable fences screwed to the sole, or by arms to the body of the plane to control the width of cut. They also can control the depth of cut to establish the raised field of the panel. This may be a simple rabbet cut in the sole like the panel plane, *or an* adjustable depth stop on the bench side of the plane.



Raising Planes

If the panel is fitted to the groove with a simple taper at its edges until it's thin enough and the panel contracts, it can become loose and rattle. Similarly, it shouldn't fit too tightly or any expansion might burst the groove. Making a tapered edge that allows for sufficient expansion and contraction can be tricky. A safer method is to form a tongue at the edge of the taper.

The advantage of a raising plane is that it also forms the rabbet or list defining the raised portion of the panel and also forms the flat tongue that fits into the frame's groove. Its cutting iron is skewed enabling it to cut into the corner of the rabbet being formed at the edge of the raised portion of the panel. The skew also helps pull the plane into the corner and guarantees that the sloping rabbet will be a consistent width.

Unless the plane is fitted with a spur ahead of the cutting iron, it's necessary to score the rabbet with a cutting gauge to prevent tear–out at the corner when working across the grain.

Although the depth stop and fence allow slight adjustments to the depth of the fielding rabbet and the width of the tongue, the main disadvantage of a raising plane is that the width of the fielding rabbet and its slope is fixed. Forming a consistent and correctly angled slope is easier because the plane is designed to be used at an angle. By comparison, a panel plane requires the user to eyeball the angle at which it's held to produce the desired slope.

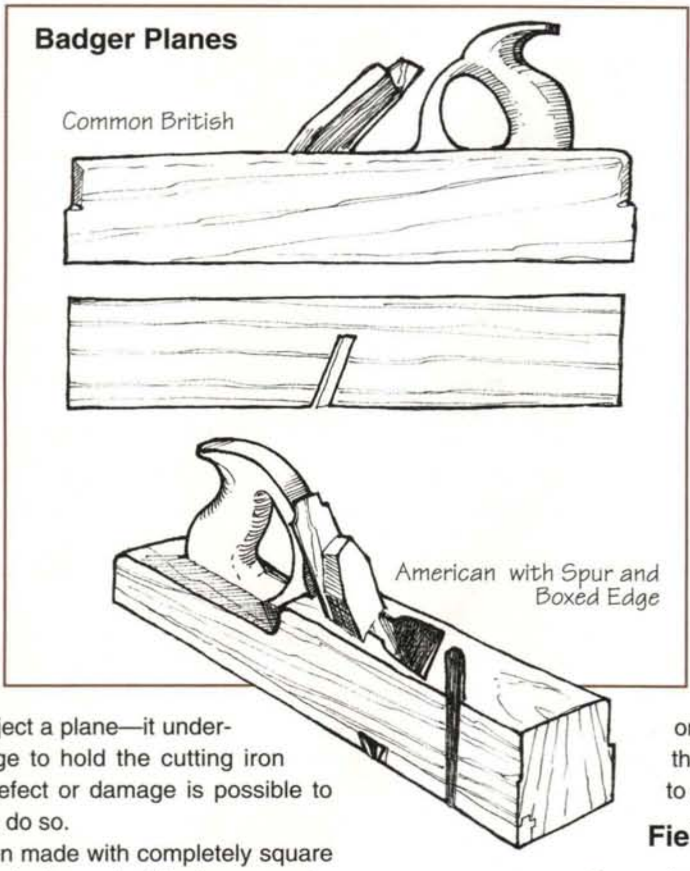
Badger Planes

The badger plane (reputedly named for the nineteenth–century London plane maker, Charles Badger) is a cross between a panel plane and a panel raiser and is a little more versatile than the others. Typically about the size of a jack plane (17" average), a badger is often mistaken for a bench plane until you notice the cutting iron is skewed and emerges on the bench (right hand) side of the stock. It can be used right into the corner of any rabbet being worked. Unlike the panel plane, this means the stock does not have to be rabbeted away. In fact, the badger is extremely useful for forming or cleaning up any rabbet.

Especially on large work, greater size produces a truer cut than the smaller metal duplex planes. If you use a badger to field a panel, it is more difficult to form a flat tongue at the edge of the slope.

Of the three planes so far discussed, badgers are the most common and easiest to find. The common badger is usually made of beech. The stocks of British varieties are usually made with a shoulder. This feature provides more wood at the cheeks of the mouth and makes the throat stronger. This is the most vulnerable part of the tool. A split or cracked cheek is the only reason to reject a plane—it undermines the ability of the wedge to hold the cutting iron securely. Almost any other defect or damage is possible to repair—and worth the effort to do so.

Badger Planes


Common British
American with Spur and Boxed Edge

American varieties are often made with completely square stocks, but some have a boxed edge and a fitted spur—valuable additions. A fillet of especially hard–wearing wood (typically boxwood—hence the term *boxing*) dovetailed into the inside corner of the sole where the cutting iron emerges helps to delay the inevitable re–truing of the sole. The spur, if sharp and perfectly aligned with the inside corner of the cutting iron, eliminates the need to set and use a cutting gauge before working across the grain.

Both varieties are preferable to panel raisers if you want the ability to determine the width and slope of fielded rabbets. The cutting irons may be from 2" to 2½" wide, but even wider rabbets can be cut if the plane is used from the edge of the rabbet working in towards the field. Old planes are sometimes found with holes in the soles indicating the use of fences to control the width, but this is usually adequately controlled provided the first few passes establishing the field rabbet have been made with care.

Aside from ensuring that the iron is properly sharpened, the capiron suitably adjusted, and the whole cutting assembly set to take a cut appropriate for the wood being worked, the only point that you need to be aware of is the relation of the sole to the side of the stock nearest the work. If the sole is worn unevenly, or if subsequent truing of the sole (done by passing the stock with the iron removed over the jointer or by shooting with another plane) has altered the angle the sole makes with the sides, two undesirable things can occur: First, the mouth of the plane (the gap in the sole where the iron emerges) will turn into something other than a perfect rectangle, and the angle the field rabbet makes with the field will change.

The first defect makes planing difficult depending on the material you're working. Ideally, the mouth should be no wider than the thickest shaving you want to take. This ensures that the geometry of the plane's throat and the curve of the capiron are able to do what they are designed to do: break the shavings being taken and prevent tear out. The second defect results in a condition that requires closer examination to appreciate its effect.

Field Rabbet Angle

Generally, the best quality raised panel work is characterized by field rabbets that are perpendicular to the surface of the field. The corners of the cutting irons of badgers are acute so they draw the corner of the iron into the corner of the rabbet. Depending on the slope of the fielded rabbet this produces a greater or lesser undercut field rabbet. Since this is usually undesirable, the recommended procedure is to sink the rabbet to the required depth; then use the badger to remove the rest of the waste above the slope.

Raising planes have an advantage here. The inside corners of their irons are sharpened so the rabbet is cut straight down. Remember, this is a function of their inability to cut only one slope. Panel planes have a similar disadvantage except when being used to cut flat panels.

It is possible to shape cutting irons to produce vertically sided rabbets, but only if you intend to use one slope consistently. Since one of the badger's virtues is its ability to cut varying slopes, this procedure is counter–productive. In any event, if the sole and side of the stock are not kept at right angles, forming perpendicular field rabbets becomes even more problematic.

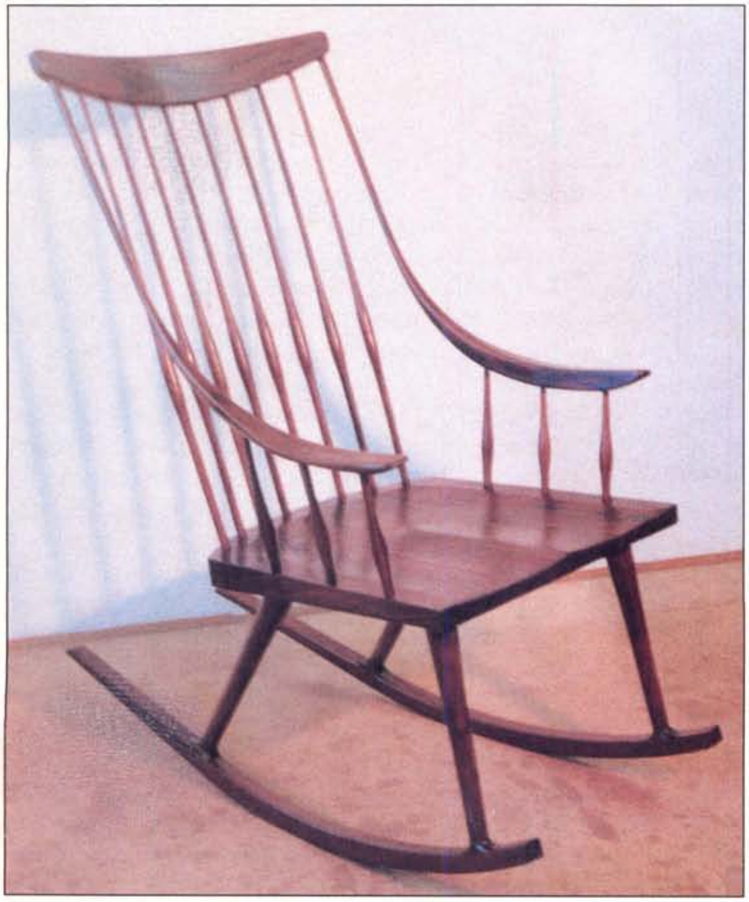
It is worth noting that a more sophisticated way of avoiding this problem altogether exists in the form of certain raising planes which cut coves or ovolos instead of the rabbet at their inside edge. PW

Old Hobby to New Business

In past issues I've used this column to tell of people who have started small woodworking operations and made them into successful businesses. The Editor of *Popular Woodworking* suggested that perhaps you would find my own story interesting. I thought about it and decided that you might, so here it is.

In 1963, age forty–six, I moved my family from Cleveland Ohio to Portland Oregon and started a small publishing business which I operated from home. It became quite successful and in 1972 we bought 60 acres of woodland about 50 miles southwest of Portland. I remodeled the shack that was on it into a year–round home and converted a 14' X 24' section of the barn into a workshop. During the transition and after the move to the farm I continued running the publishing business.

I had woodworking as a hobby for thirty five years when in 1974 I decided to start making hand-crafted furniture professionally. My plan was to phase out the publishing as the furniture business increased. In this way I could keep a steady income, although the work load would increase.



In 1974 the market for hand-crafted furniture was just beginning to appear. At the time, besides me, there were only three others in the entire Pacific North West doing it. I have always been impressed by the Shaker's work and so decided to follow their lead in my designs. As far as marketing my work, I made a false start. There was a small gallery in Portland that said they would handle my work. I gave them a nice coffee table (on consignment, the standard way of working with galleries) and they used it as a display table. Nobody could see it and they put a small tag on it which nobody noticed. It took me a while to realize what was going on before I took back the table. In the meantime I had made a few other pieces, including a couple of ladderback Shaker style chairs with woven tape seats. These turned out to be very uncomfortable—the Shakers were never strong on comfort. I realized that I had to get away from that style of chair and also that the true Shaker furniture was too stark and stiff to appeal to most people. During this time I received a few orders through personal contacts but the situation was not encouraging. I also entered a couple of small arts shows without too much success.

One thing that did work then was taking rough tree limbs of various diameters and other chunks of wood I found in my woods and putting them on the lathe in their found condition. I would begin the turning with only a rough idea of the final piece, finding inspiration in the found form. The result was a collection of candle holders, weed bottles, small bowls, and such, some with the bark left on entirely, some with part of the bark, and some turned right down to the heartwood. I achieved some beautiful effects this way and was able to price these pieces from $5 to $50 depending on size and appearance—in 1974 these were good prices. I would take a couple of dozen of these to each art show and they always sold out. This paid the cost of the show with some left over. I could do this because I didn't have much furniture business. As the furniture business increased I reduced the amount of these turnings I made.

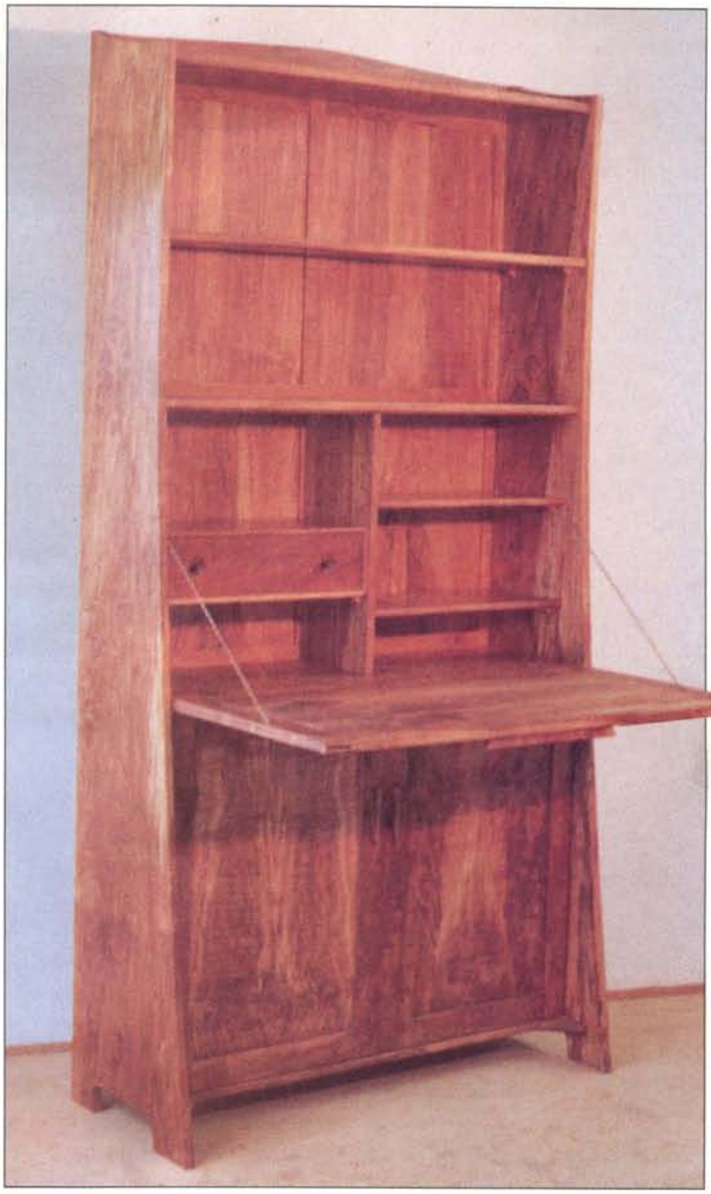
Things changed in early 1975. I met two fellow craftsmen. Gary Lawrence, a sculptor, and Jay Jensen, a potter, both fairly well establish and with a considerable following. We all lived within five or six miles of each other in the foothills of the Coast Mountains. We decided that we would have simultaneous open houses on the same weekend. Being in the business, I created a brochure which talked about each of us and our craft. It had a map and told in detail how to get to each place. It was designed to attract people with an appreciation of art and with money—the latter being very important). The other two fellows had good mailing lists, mine was very skimpy. We combine the lists and sent out the brochures for the second weekend in July.

I had made up about eight pieces representing the different types of furniture that I wanted to build. I also had a large selection of turnings. The weekend was a success. We had a couple of hundred people drive out from Portland or over from Salem and they visited all three places. What we had done was a new idea in selling arts and crafts and the people loved it. They could see the craftsman's studio and his work and talk with him face to face.

I didn't sell many of the pieces I was showing (which was a blessing in disguise because I then had them for *the next* show) but I took a few orders for variations of them. This kept me going and word of mouth brought in a number of additional orders. I was still keeping up with the publishing business, otherwise we would have starved.

Because the first time was so successful, in 1976 we decided to do it again. This time we added a wine tasting because we had a friend who owned one of the early Oregon wineries. I had just built a large screen porch so I had the wine tasting at my place. This affair was more successful that the first one. Over 500 people showed up and we all did a good business.

With this success under our belts, we talked it over with our winery friend and decided that we would hold an arts and crafts show the weekend after Thanksgiving at his winery in McMinnville a town near us and nearer Portland. We invited eleven other arts and crafts people to come in with us, we made a big mailing using everyone's lists, and we got a press release in the Portland Oregonian. The Thanksgiving weekend was cold and it rained for all three days, we thought we were going to bomb. Instead we had 3000 people visit the show during the three days. We all did quite well and I took about a dozen orders for a variety of pieces from chairs to tables to cabinets.



After the success of this show, Gary decided that in the spring he would have a similar show at his place which was in the mountains a little way out of town. We had the same group as at the winery with a few more; again it was a big success. The idea of art shows, particularly art shows in the country, was new and they were becoming the place to go. During this period, I was developing and refining my style. It was apparent that if I was to create a name for myself that would in time bring higher prices for my work, it was necessary to develop my own style and it had to be one with which I was comfortable and that was attractive to many people. When I started, I had decided that I would only build my own designs. I changed from ladder back chairs to spindle back chairs of my own design. They were better looking, much more comfortable, and sold very well.

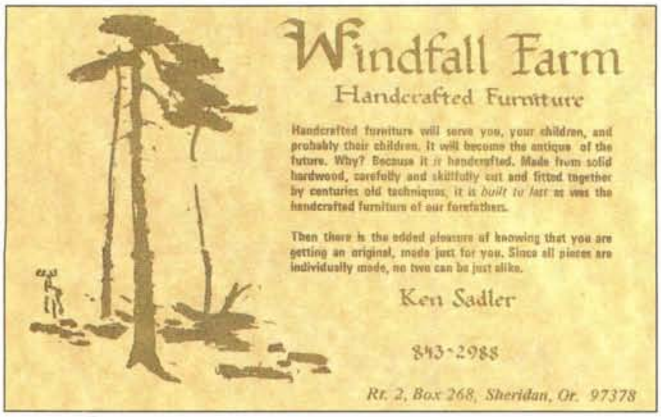
A large part of developing the style hinged on getting the right wood. The basic theory behind my work was one of keeping the lines simple and plain and letting the wood provide the beauty in the piece. In order to make this work, I needed wood that would produce that beauty. I was lucky, I stumbled on the answer. On my land there was a large old alder tree that was almost dead. I cut it down and was able to get two 10 foot logs about twenty four inches in diameter out of it. I had it hauled to a small local sawmill and had the logs plain sawed (some call it flitch sawn) into 1" and 2" boards. They produced some of the most beautiful wood I'd ever seen. I decided that alder was my wood and cut down a cou-

ple of considerably smaller tress. To my chagrin, the smaller trees did not have the beautiful grain patterns and colors of the older larger trees. However, I had several 80 to 90 foot alders on my land. I cut one of them and got 1500 board feet of lumber from it—beautiful stuff. After milling, I brought it home and stacked it on sticks in the barn to air dry.

I followed the same road with western big leaf maple, the heartwood of which is a beautiful golden color. But to get a plank with enough heartwood to be effective, I had to again find the big trees. My third wood was Oregon walnut which is considerably different from eastern walnut. It is less dense and has much more interesting grain patterns. It is also streaked with colors of dark green, red, and purple, all coming from the minerals that get into the wood from the rain as the tree grows older. I got this wood from a young doctor who wanted me to build him a desk. He said he had a supply of walnut and I should take some for the desk. I arranged to build the desk in exchange for 1000 board feet of the walnut which I hand picked.

I always told my clients that I would build their pieces out of any wood they wanted, and I did, but ninety nine times out of one hundred they chose one of the three woods I have just described. The alder and maple cost me 65¢ a board foot stacked in my barn. The walnut cost me the building of the desk, which I showed at the next show and took orders for three variations of it.

After the spring show at his place Gary decided he was going to open a gallery. He asked me and Jay Jensen to join him in the venture but we declined so Gary went ahead on his own. He found a perfect building, an old grange hall, about five miles from my place and on the main road between Portland and the Oregon Coast. The traffic on that road during the week was around 1500 cars a day; over the weekends, that jumped to between 3000 and 4000. The gallery prospered from the beginning and I had pieces there on a permanent basis. I also had a portfolio of color photographs of my work and a stack of cards sitting out where people could pick them up. The gallery took 35% if they sold a piece from the floor or took an order, 15% if they sent the prospect to my farm and I made the sale—those percentages are around 50% and 25% today. Since they didn't know much about furniture, the sales folks at the gallery usually sent the people over to the farm and I made the sale.



Windfall Farm

Handcrafted Furniture

Handcrafted furniture will serve you, your children, and probably their children. It will become the antique of the future. Why? Because it *is* handcrafted. Made from solid hardwood, carefully and skillfully cut and fitted together by centuries old techniques, it is *built to last* as was the handcrafted furniture of our forefathers.

Then there is the added pleasure of knowing that you are getting an original, made just for you. Since all pieces are individually made, no two can be just alike.

Ken Sadler

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A year later Gary opened a branch of the gallery at Salishan Lodge on the coast. This was a five star resort to which people came from all over the country. They would fly into Portland and rent a car to drive to the resort. The road went past the main gallery and by the road I lived on. I had pieces, a portfolio, and cards at the Salishan branch. Visitors to the Lodge would see my work, like what they saw, pick up a card, and on their way back to the airport, stop at the farm. Invariably I got an order. I now have pieces all over the country—all without leaving the farm.

As the years passed, I continued to show in the galleries and at art shows. The main gallery had a show every summer for several years and one of the wineries held one around Thanksgiving each year. These were always well attended and thus enabled me to present my work to a fairly large audience of the right people. (Those who appreciated what was being shown and had the money to pay the prices I was then asking.)

By this time there were a lot more furniture makers around than when I started. There was a big furniture show to open a new building at the Forestry Center in Portland. It was a juried show and fifteen of us were chosen to be in it. Each of us had a booth about ten by twelve feet arranged around the outside of the hall. The show ran for three days. I had six pieces on display. During the three days, I took orders for eight pieces and nobody else took any. I never left my booth and there wasn't a person who came by that I didn't at least acknowledge. I talked with everyone that was interested. None of the other furniture makers did this. They felt above being involved in selling. They felt that people should see the value in their work and come and buy it. Most of the time they were not even in their booths. They were angry with me, claiming that I underpriced them and that was why I sold and they didn't. It's true, my prices were a bit less than most, but I followed a sensible policy. I priced my work at the highest price I could get at the time. This way I sold and my work got out into people's homes and got talked about.

As my backlog increased, so did my prices. As an example, my first rocker went for $135 and took me 45 hours to build. As time went on and the backlog grew the price increased until in the later years I was getting $1000 for a similar piece yet building it in 30 hours. These were the prices in the '70s and early '80s—today those prices would be 50% to 75% higher, pricing the rocking chair at $1500-$1800. At this level you can make a good living. The level your prices reach, depends on the name and prestige you're able to build for yourself. Your backlog is one measure of this.

I'd like to address here a couple of sales ideas I've developed that got me a great many orders. The first one involves the down payment on the order when it's written. Most other furniture makers insist on 50%. I told my clients I didn't want any down payment. When the piece was finished I'd call them and they could look at it. If they like it they took it then they paid for it, otherwise they didn't pay a thing. This policy has overcome the resistance of many people to signing an order at first meeting and has been particularly valuable when dealing with people from other parts of the country. It was especially important when the backlog started to grow and began reaching two years. Of all the orders over all the years, only three pieces have been rejected and those I sold in the gallery within three months.

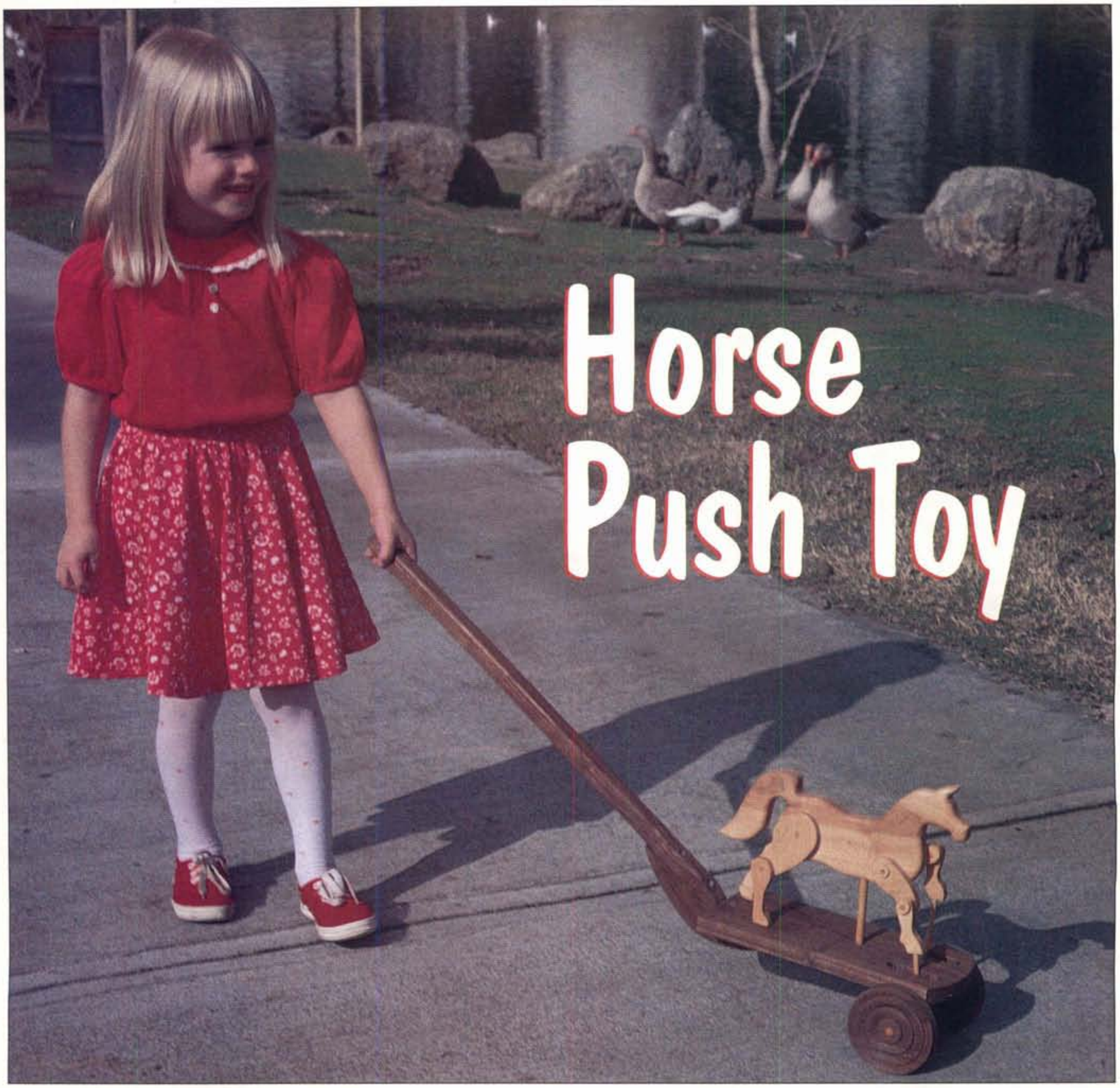
The other sales help that worked so well was a card. It was 4" X 6", on one side it had a sketch of a deer in the forest, my trade name "Windfall Farm," my name, address, and phone number, and some copy as to why you should buy hand-crafted furniture. The other side listed my general rules of operation and had a map showing how to get to the farm. I had them available at both galleries and always took a large supply to any show and put them out where people could pick them up. Many people took them and many people came to the farm later to order pieces. Often as long as two or three years after they got the card. It became a pretty regular thing, almost every weekend, in good weather, people would drop in to talk about furniture. My wife and I entertained them in our home as friends and they invariably placed an order before leaving.

As to my shop, I've already mentioned the original size, in 1978 1 enlarged it with a 10' X 15' addition so that I could have a sizable assembly area for large pieces. For power tools I had a ten inch table saw, an eleven inch drill press that had originally been a bench model and I made into a floor model, an eight inch jointer with thicknessing attachment, a 14" bandsaw, and a twelve inch heavy duty lathe. I had a router that I made into a shaper, and a couple of electric orbital sanders. Oh yes, I had a 7" skilsaw that I used to rough–cut my large rough planks down to manageable size. I had many hand tools and my walls were hung with jigs and fixtures I designed and built as well as dozens of templates for different parts that I used over and over to make up different pieces. I had one wall with nothing but bar clamps and c-clamps. At the time I built the addition, I designed and built an exhaust system. I used plastic pipe and built my own gates which turned on the blower when they were opened.

Running an operation like this is not easy. I worked alone except for the help of my wife in the sales work at the farm and at the shows. Even as the backlog climbed toward two years I continued working alone. In the area where I lived I could not find anyone interested in learning the craft of furniture making or working for the wages I could afford to pay. I'd find with those I did hire that by the time I'd explained what I wanted and how to do it, I could have done the work myself without the hassle. I admit that this is not the best way to operate. The more you succeed, the more you're tied down to your shop and the harder it is to take time for the shows that are necessary to that success. At the same time you can never back off and tell someone, "I'm too busy to take your order right now. Come back later." If you do, word will get around that you're quitting and you'll lose business. My answer was to keep raising my prices. That slowed the new business some, but it's a rather delicate balancing act and you have to be careful not to push them too high too fast.

That's my story. I think you'll find some helpful information in it if your thinking of embarking on a similar venture. Should you take this road, I can tell you that you'll find immense satisfaction and enjoyment in doing your own thing. If you have self–discipline, self-confidence, and enthusiasm for what you're doing, not anything nor anyone, but you, can keep you from succeeding. I know, I've been there. PW

Horse Push Toy



A Popular Woodworking Project

by Gilbert Crook

There's something magical about a mechanical wooden toy, for the builder and the recipient. Push toys are fun because the action is out front where the child can see it instead of behind where the toy can snag on furniture. This toy will put a little carnival atmosphere in anyone's day.

I used maple for the horse and walnut for the base, crankshaft and handle—both woods are durable and well suited for a mechanical toy. The parts for this toy are of various thicknesses. Don't worry about buying a lot of different dimensioned stock. The parts are small and easily sanded to the proper thickness.

Transfer the full–size patterns for the body (A), rear legs (B), rear hooves (C), front legs (D) and front hooves (E) from the PullOut™ Plans to your stock as sized in the Cutting List. Cut these profiles with a band, jig, or scroll saw and drill the holes as located in the patterns. Notice there are ¼" and 5⁄16" holes—the connecting dowels are glued in the ¼" holes and rotate within the 5⁄16" holes. Also, note the holes in the

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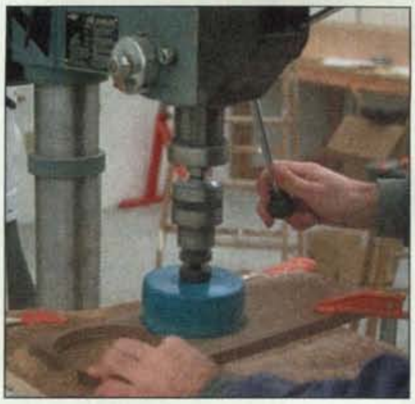
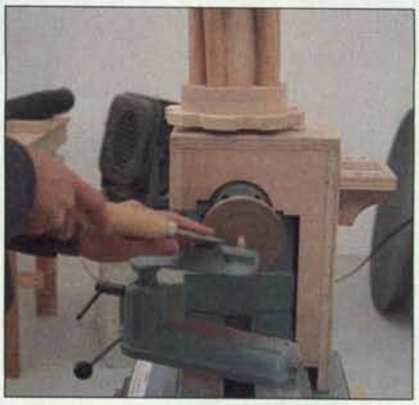
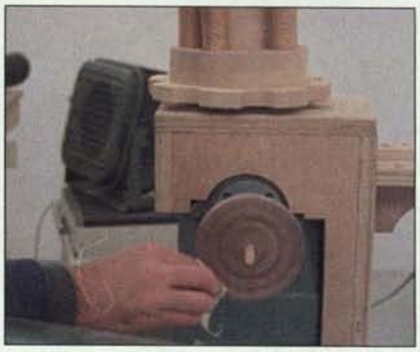
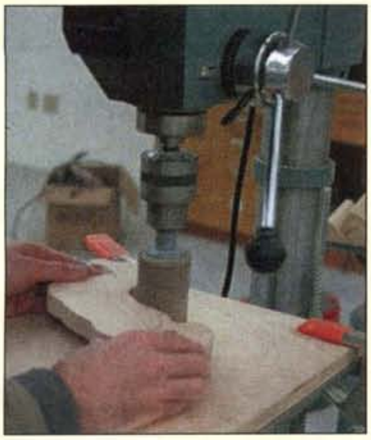
***Gilbert Crook** works wood in Havelock, Ontario.*





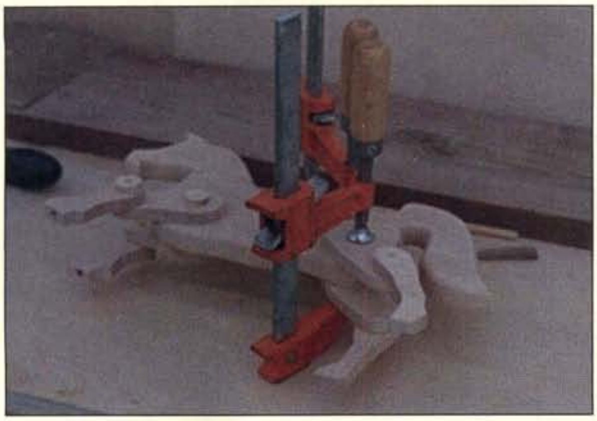


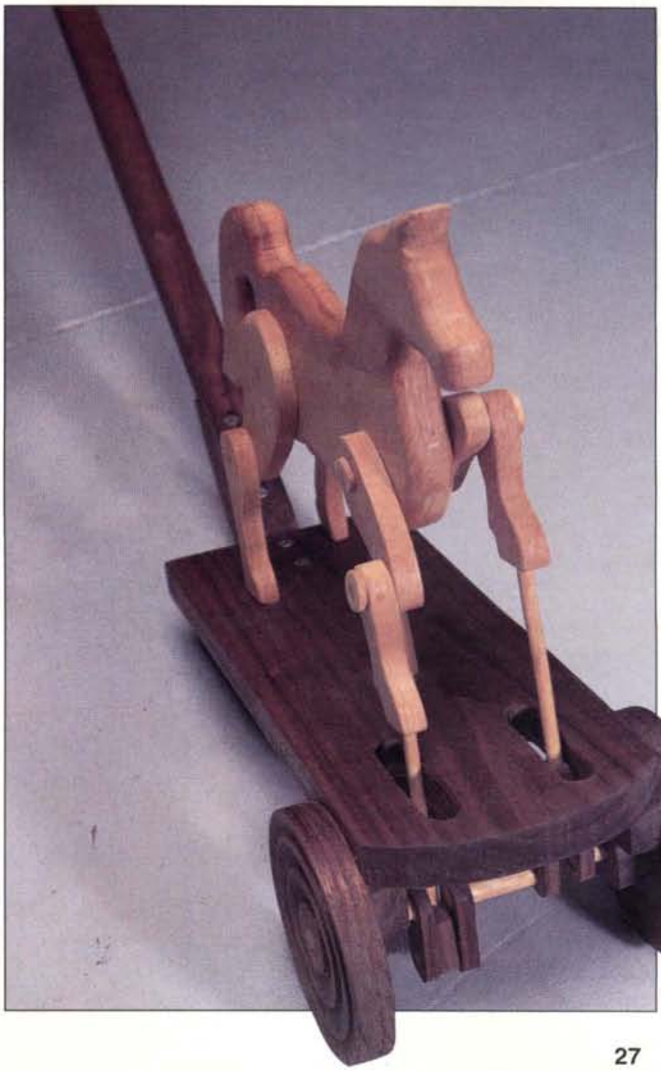
Cut the wheels with a hole saw; then turn the beveled rings with a skew on the lathe.



Use a drum sander to remove the saw marks.

Be careful not to glue the rotating parts to the stationary parts.

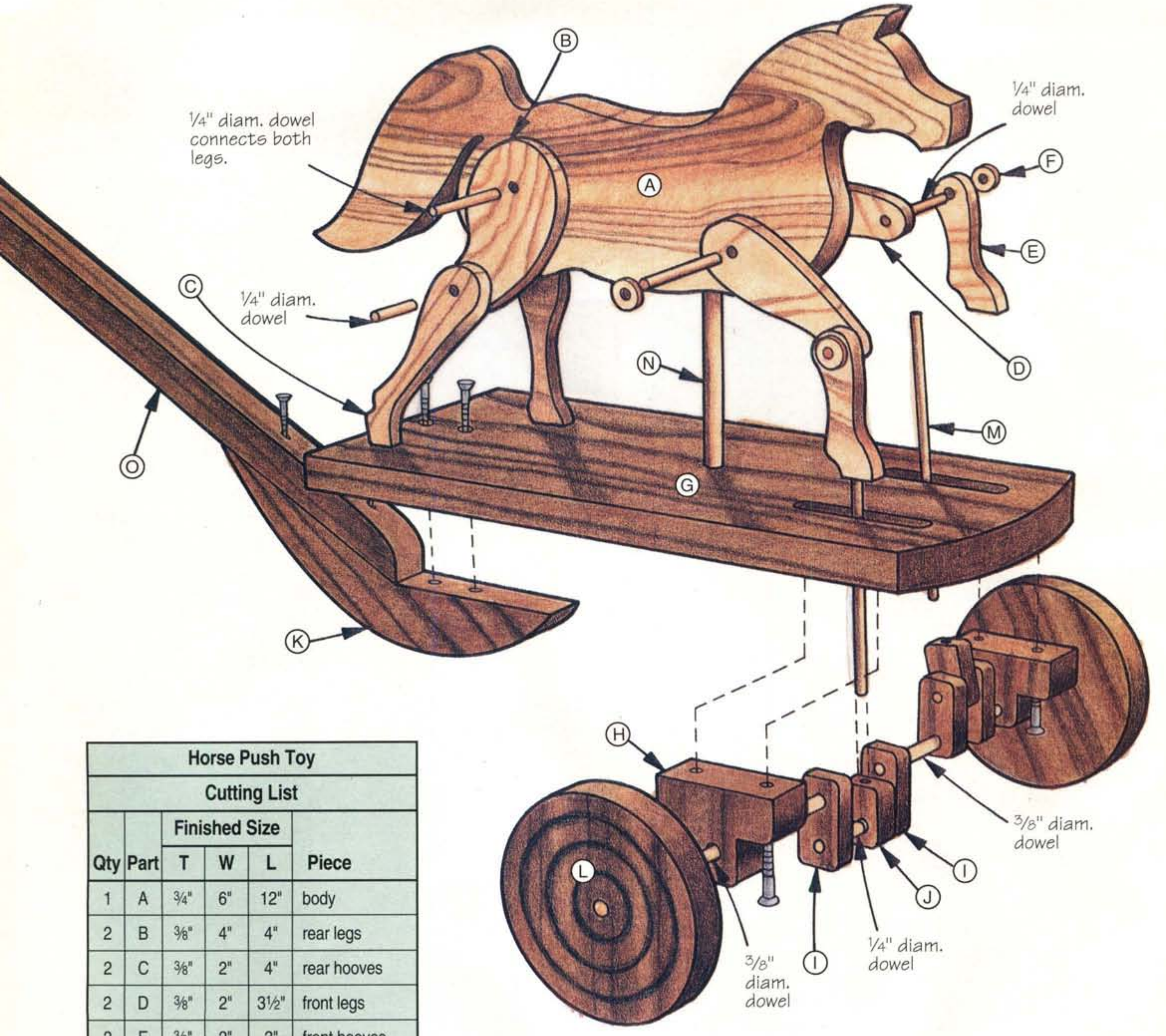




bottom of the front hooves to recieve their supports. To make each front leg stop (F), drill a 1/4" hole in 1/4" stock then rough–cut the perimiter on a scrollsaw and sand to finish shape. Cut the connecting dowels a bit longer than shown in the crankshaft diagram on page 29.

Ease the edges of all pieces with an 1/8" roundover bit or with sandpaper. Dry assemble the front leg joints, so that they rotate freely; then, sand the connecting dowels to length. Assemble the horse with glue as shown in the assembly figure. The rear legs are stationary, with dowel pegs for strength. Be careful not to glue the rotating parts to the stationary parts.

Cut out base (G) as dimensioned on page 28. Cut out the 1/2" slots in the base by drilling a number of 1/2" holes; then, clean the waste with a chisel. Cut out the axle supports (H),

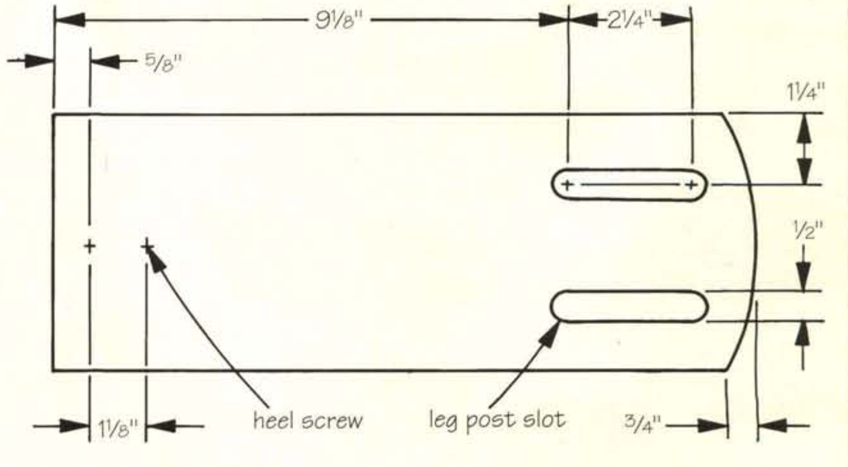


Horse Push Toy

Cutting List

		Finished Size			
Qty	Part	T	W	L	Piece
1	A	¾"	6"	12"	body
2	B	⅜"	4"	4"	rear legs
2	C	⅜"	2"	4"	rear hooves
2	D	⅜"	2"	3½"	front legs
2	E	⅜"	2"	3"	front hooves
4	F	¼"	½"	½"	front leg stops
1	G	¾"	4¾"	12½"	base
2	H	¾"	2"	3"	axle supports
4	I	¼"	¾"	1⅝"	crank sides
2	J	⅜"	¾"	1¼"	crank centers
1	K	¾"	3"	8"	heel
2	L	¾"	4" diam.		wheels
2	M	¼" diam.		3⅝"	leg posts
1	N	⅜" diam.		3⅝"	mounting post
1	O	¾"	¾"	25"	handle
1	–	¼" diam.		24"	various
1	–	⅜" diam.		24"	various

Base



Mortise the slots in the base with several passes on the drill press then clean the waste with a chisel.

Thickness the crank pieces on a belt sander. Assemble the crank shaft in sections so the centers rotate freely.

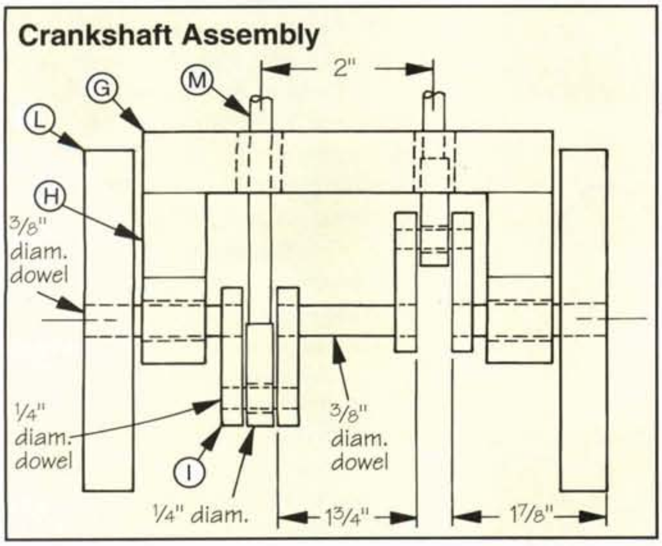
cam sides (I), and cam centers (J) as dimensioned below and drill the holes as shown in the figures. Transfer the heel (K) pattern from the PullOut™ Plans to a piece of ¾" stock and cut the profile.

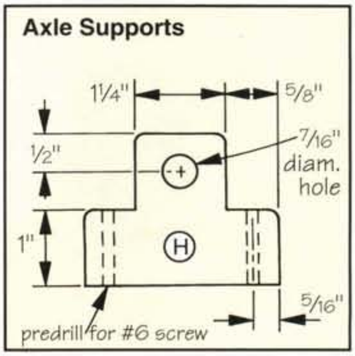
Cut out the wheels (L) with a 4" hole saw. The patterns shown on the wheels were turned on a lathe. Mount the wheel on a short section of dowel, chuck the dowel in the lathe, and turn your own pattern or copy the beveled steps shown here.

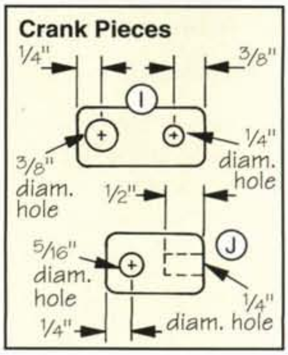
Assembly

Attach the axle supports to the base with #6 X 1½" screws. Glue the leg posts (M) to the crank centers. Study the crank assembly figure below then assemble the crank shaft with sections of ¼" and ⅜" dowels as indicated. Again, be careful not to glue the rotating parts to the stationary parts. Note that the cranks are set opposite each other. Make sure that the leg posts are centered in the crank slots of the base and that the whole crank turns smoothly before gluing the assembly together.

Set the leg posts in the front hooves and the horse in position on the base. Mark the location of the mounting post (M) on the body and base. Drill ⅜" deep holes for the mounting post; then, if all turns smoothly glue the mounting post to the horse and base and the horse to the legs posts. Predrill the base and hooves to accept finish nails to secure the hind hooves. Attach the heel to the base with two countersunk flat head screws. Bevel the end of the handle to 58° and screw the handle to the heel. Sand smooth all handle and base pieces and finish with several coats of oil. You can also use a clear polyurethane for a more durable finish or paint the horse. One horsepower should satisfy kids of all ages! PW


Crankshaft Assembly


Axle Supports


Crank Pieces

Carve an Egg

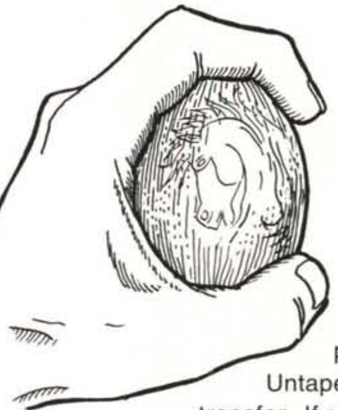
by Jack Ekstrom

Carve an egg for Easter. Not only are they beautiful to look at, but carving them is easy and fun. All you'll need to carve these eggs is a knife with a hooked blade and a strop to keep it sharp. You can turn the blanks from 2" X 2" basswood on a lathe. The egg fits perfectly in your hand for carving.

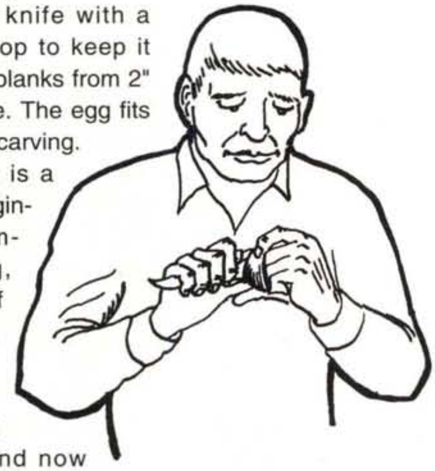
The horse head egg is a course all by itself in beginning carving. It encompasses incise carving, shallow relief, deep relief and in–the–round, plus wood burning, chip carving. This egg was carved by Jerri Compton of Gainsville, Texas and now resides in the carving collection of Fred Clark, in Colorado Springs.

Getting Started

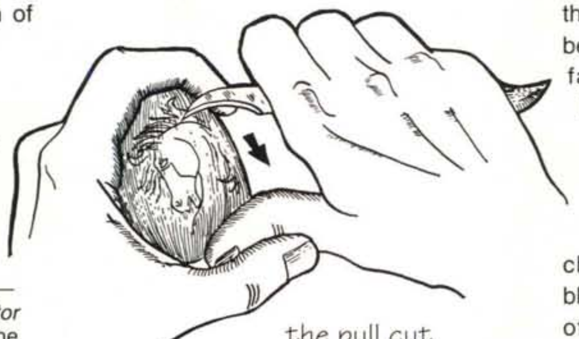
Transfer the pattern onto the wood using a piece of carbon paper, or make your own by rubbing the back of the pattern with a soft graphite pencil.



holding the egg



hold wrists tightly against chest



the pull cut

Tape the pattern to the egg and use a fine point pen to transfer the details. Untape a corner and check the transfer. If you can't see the details, redraw over the pattern.

Hold the egg with your thumb on the bottom and your forefinger curved around the top. Your other three fingers tightly brace the back of the egg. Bend your thumb out of the way to protect it from an accidental slip of the blade.

The Pull–Cut

The basic cut for a beginning carver is the draw–cut. Hold your knife like a pencil. Draw or pull it toward you, following the lines of the pattern. Keep the fingers of your other hand behind the cutting edge. The draw–cut has to be altered for use on the rounded surface. On the eggs, the draw–cut becomes a pull–cut. Make several shallow cuts instead of one deep cut. Cut away 1⁄32" to start.

The safest way to carve eggs is to lock your wrists onto your chest. Grip the handle close to the blade. Hook your thumb onto the side of the egg opposite the side you're carving. Use all four fingers to pull the

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***Jack Ekstrom** is a writer and illustrator from Colorado and former editor of* The Mallet *for which this column is named.*

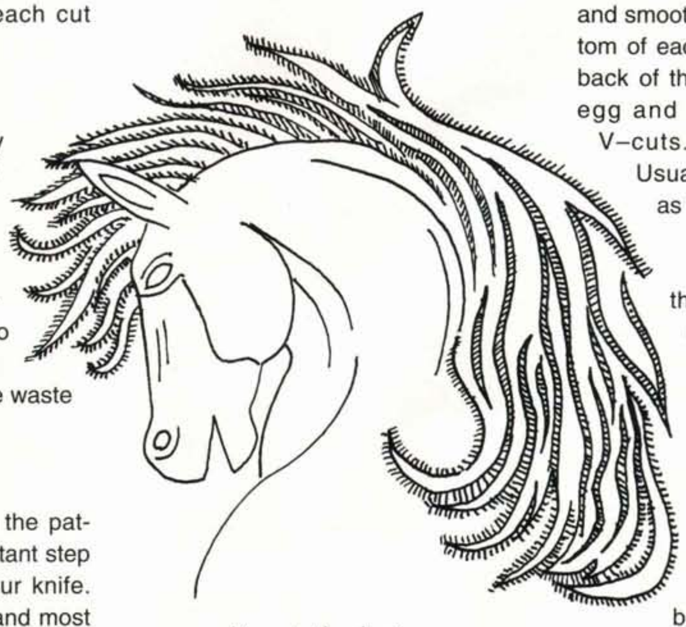
knife slowly downward. Use your other thumb behind or on top of your carving thumb to provide leverage. Always keep wood between the blade and your thumbs. The cut is controlled mainly with your forefinger. Make each cut easy, don't force the knife.

The V–Cut

A second cut is usually made at an angle parallel to the draw or pull–cut. The cuts come together about 1⁄32" into the wood to make a V. The V–cut is used exclusively on this egg. Cut once to avoid splintering and tear out. An incomplete V–cut forces the waste to be pulled out.

Incise Carve the Head

The simple act of drawing the pattern onto the wood is an important step in the beginning cuts with your knife. Incise carving is the simplest and most important type of carving. Both beginners and professionals rely upon incise carving for detailing. Draw around the pattern with your knife to layout the hair and eye details. Don't cut very deeply into the wood. Deep cuts are called relief carving. Cut the front of the horse 1⁄8" deep.

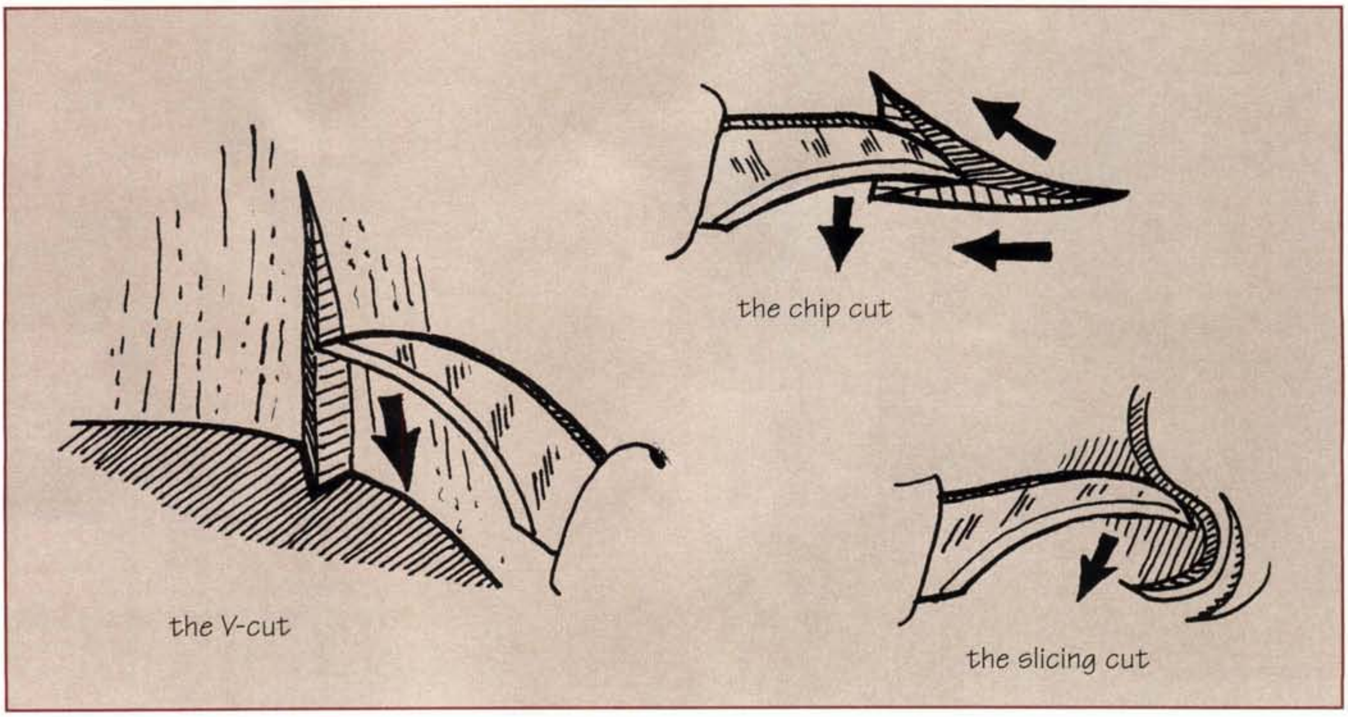


V-cut the hairs

Pull–cut the long, flowing mane on the back of the horse head. Begin each cut on the top of the head. Carefully and smoothly cut all the way to the bottom of each hair. Cut the hairs on the back of the head 1⁄32" deep. Turn the egg and repeat each cut to make V–cuts. Each hair is one V–cut. Usually the V–cuts are as wide as they are deep.

Where two hairs join together there's a three–sided V–cut. This is a chip–cut. Each chip, like each sliver from a V–cut should come out of the wood easily. Do not pry or tear the wood with your knife. You might break the point, and ruin the cut.

V–Cut all of the mane. The actual hair is the ridge between two V–cuts. Some hairs are simply suggested with one V–cut. Be sure your thumbs are firmly set and protected before you make each cut. Make fifty V–cuts for all the mane, including the curved hairs on the front of the head.



the chip cut

the V-cut

the slicing cut

Safety Rules for Beginning Carving

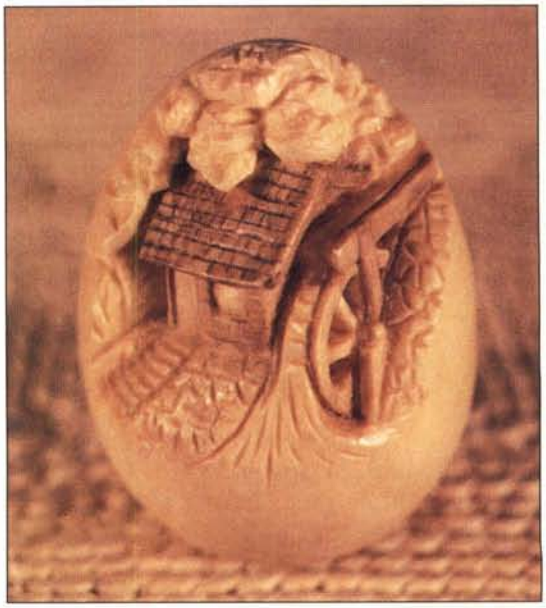
1. Always have adhesive bandages within reach and know what you're going to do if you hurt yourself seriously.

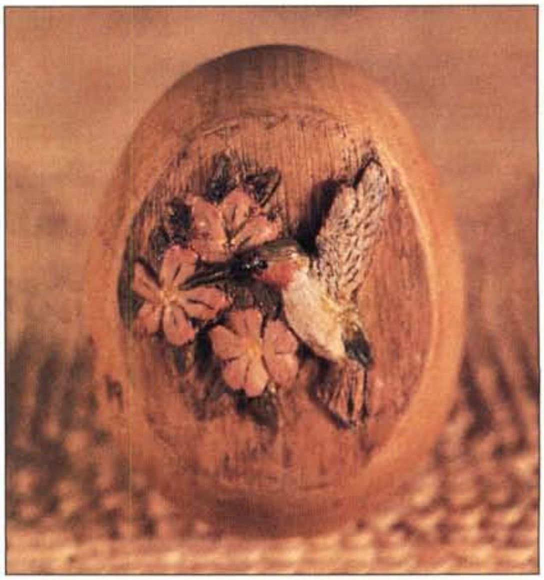
2. Never cut toward yourself.

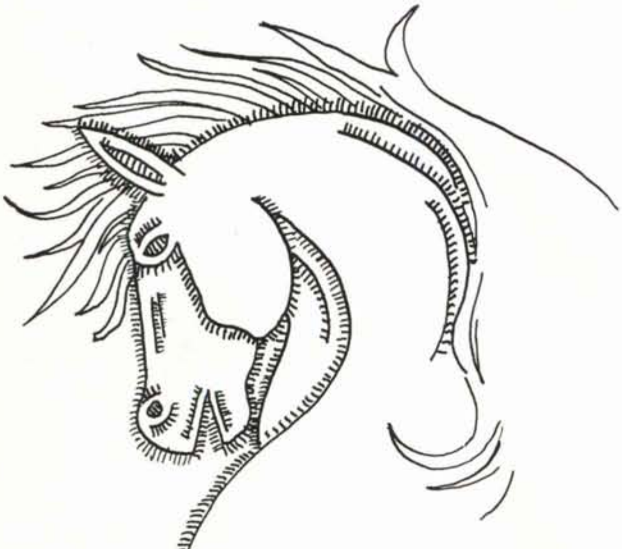
3. Never carve in your lap—keep the workplace on the table.

4. Always keep your free hand and fingers behind the cutting edge of the knife.

6. Cut down toward the table—the knife shouldn't fly into the air at the end of a cut.





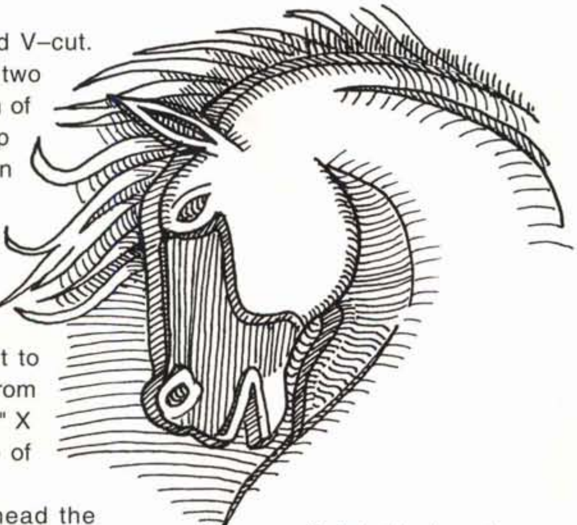


V-cut the head

The Slicing–Cut

The slicing–cut is a broad V–cut. Remove the wood between two half–round hairs at the bottom of the back neck, and near the tip of the ear completely. Turn your knife nearly flat against the wood and slice the wood away in one careful movement. Slice–cut around the outside of the horse head. Use this cut to separate the nose and jaw from the egg form. Slice at least ⅛" X 1⁄32" deep around the outside of the hair.

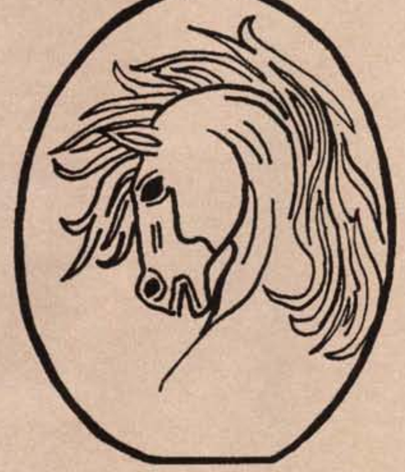
Incise the entire horse head the same as you did the hair. Incise the head, neck, and ears. The horse head looks best with ⅛" deep cuts. Overlap several 1⁄32" V–cuts deep until you're finally ⅛" deep.



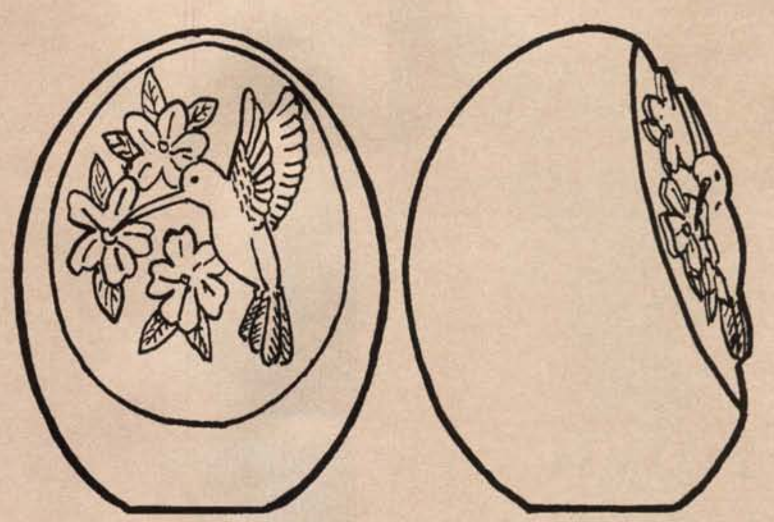
finish the head

The Neck

Start deep V–cutting with the back of the neck. First, cut a 1" long half–circle. Make this cut several times following the same line. It may take a dozen shallow V–cuts to get ⅛" deep. Be patient and go slow. Next, use a slicing–cut around the back of the neck. This slicing–cut is one–half of the V–cut you've just finished. Round all the edges of the head and neck. Make another curved V–cut underneath the jaw where the neck starts. This cut is almost like the one on the back of the neck. Cut straight in along the jaw and keep cutting along the neck. Then, with a long slicing cut, round the neck.



horse head

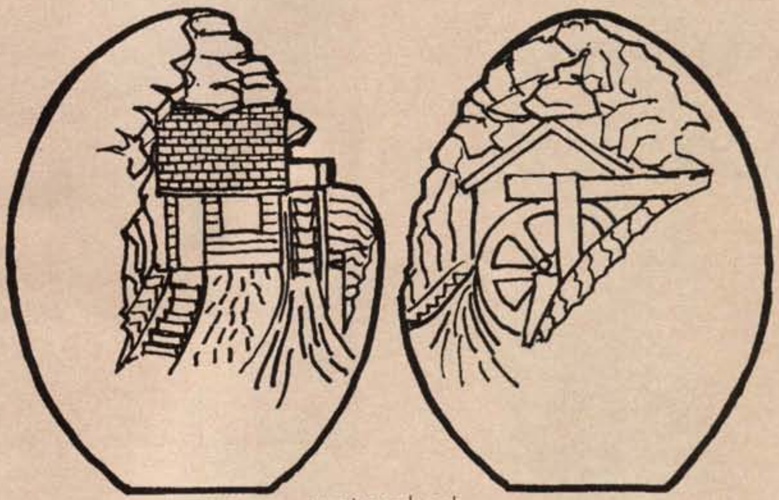


hummingbird

Full-Size Patterns

SOURCE

You can purchase basswood blanks, stropes and small fixed–blade knifes from Warren Tool Co., Inc., see ad on page 12. I've found that the best knives to use on the eggs are the FH22B and FH8B.



waterwheel

The Head

Make 3/16" deep V–cuts all around the head. Cut the front of the head above the nose and under the lower jaw a little deeper. Separate the lower jaw from the neck with a very narrow deep V–cut.

Cut the mouth with a deep V–cut, and separate the ear from the neck and the forehead. Make a long V–cut inside the ear. Drill the nostril with a spinning motion of the knife. Make the eye with a V–cut shaped like a football.

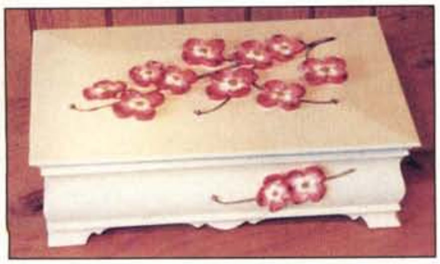
Deep V–cuts are made underneath the eye, around the nostril and to outline the lips, and along the line that marks the front of the jaw. Cut the nose between the eye, nostril, lips and front of the jaw lower than the rest of the head with slicing cuts.

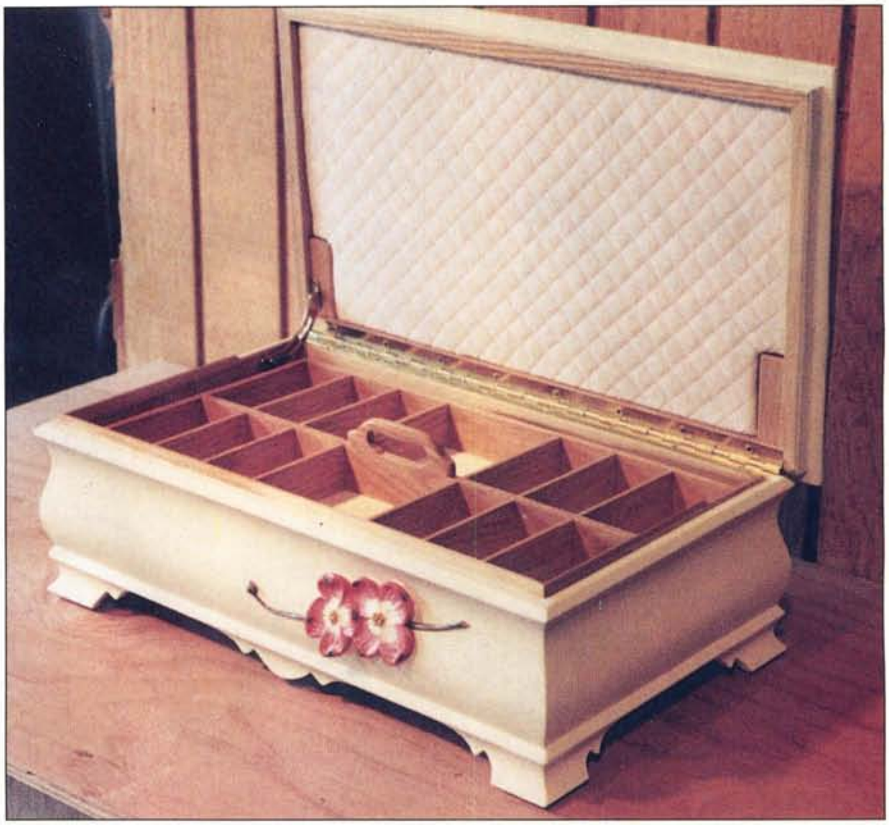
Finish the mane on the front of the head with deep V–cuts.

Finishing

Jerri Compton finished her horse head with a wood burner. Burn the eye, nostril, lips and ear. Then use a gray acrylic stain on the mane and around the head. Wipe the stain so it only remains in the V–cuts. Use varnish or oil for a final finish.

Keep your knife sharp by stropping it on leather, like a barber. And don't forget to keep an adhesive bandage handy. PW





Crown Molding Jewelry Box

by Bob Gretter

I built this jewelry box from pieces of paint grade crown molding and baseboard left over from a redecorating job in the dining room. The molding profile I used is a common shape and size. There is, however, no reason the box can't be built from a different molding stock.

Millwork

It's easiest to perform the first few steps on a single piece of 58" long stock and then cut the front, back, and sides to length. First, rip ¼" from the top edge of the molding (A and B) and ⅛" from the bottom edge. These flat edges accommodate the hinge on the top, and provide a flat base for the box.

Cut the grooves for the base and tray rail as shown in Figure 1. Cut these grooves with a standard kerf (⅛") blade 3⁄16" deep. With a tall auxiliary fence on the table saw, cut the 1/2" deep rabbet for the lip pieces (see Figure 1).

Before cutting the tray rail frame (C and D) and lip frame (E and F) pieces to length, it is best to work with long pieces and glue them in place in the case them miter the glued–up case pieces all at once. This method assures accurate joints all around. Cut the front and back (A) and sides (B) to length with opposing 45° miters on the ends of each piece after gluing the tray rails and lip pieces in place. Since the thickness of crown moldings vary, the lengths given for these pieces are inside dimensions. Transfer the full–size scroll patterns from the PullOut™ Plans to the front, back and side pieces and cut out the waste.

Make the top (G) from ½" stock and finish sand it to a thickness of 7⁄16". It may be necessary to glue up a panel to make a top as sized in the Cutting List. With the tall auxiliary fence in place and the table saw blade set to 84°, cut the top taper on all four sides. Round over the outer edges of the top piece with a ¼" diameter bull nose bit.

Shape the outer edge on 58" of ½" X ½" stock for the top frame. Use an ornamental ogee or cove bit so it compliments the top and base shapes. Cut the shaped top frame pieces (H and I) to size with opposing 45° miters. Cut out the bottom (J) from ⅛" hardboard.

Assembly

Glue the case together. Use frame clamps or a band clamp and shims as shown in the photo on page 24 to hold everything together—remember, a box can never be too square. With sandpaper, slightly roundover the outer edge of the rim pieces. Cut the corner blocks (K) to size and glue them in place. The blocks add strength to the box, and any rocking can be taken

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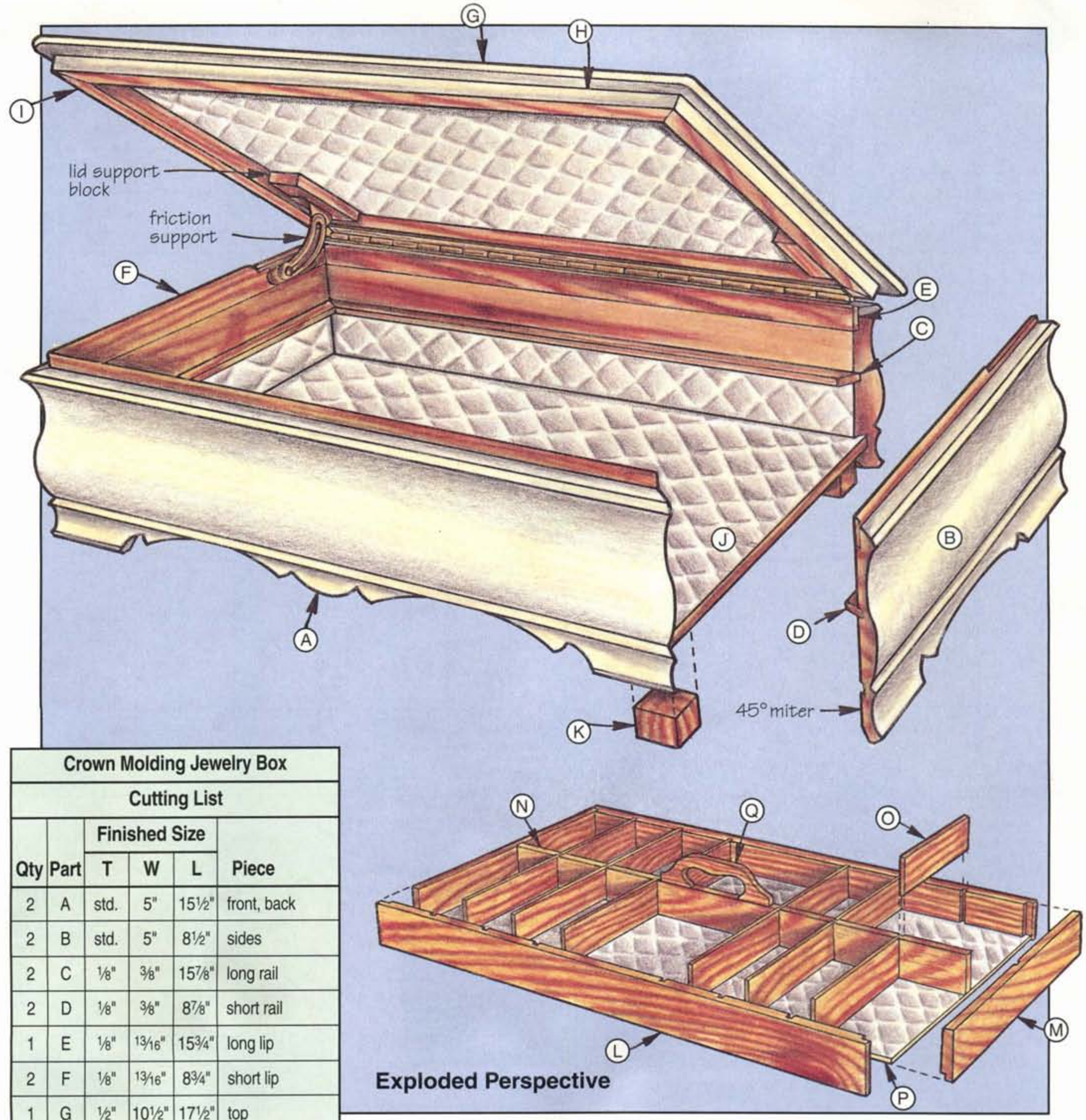
***Bob Gretter** works wood in Magava, California.*



Exploded Perspective

Crown Molding Jewelry Box					
Cutting List					
		Finished Size			
Qty	Part	T	W	L	Piece
2	A	std.	5"	15½"	front, back
2	B	std.	5"	8½"	sides
2	C	⅛"	⅜"	15⅞"	long rail
2	D	⅛"	⅜"	8⅞"	short rail
1	E	⅛"	13/16"	15¾"	long lip
2	F	⅛"	13/16"	8¾"	short lip
1	G	½"	10½"	17½"	top
2	H	½"	½"	17"	long top frame
2	I	½"	½"	10"	short top frame
1	J	⅛"	8⅞"	15⅞"	bottom
4	K	1"	1"	1 3/16"	corner blocks
2	L	¼"	1½"	15¼"	tray front, back
2	M	¼"	1½"	8⅛"	tray sides
1	N	¼"	1¼"	15⅛"	long divider
12	O	⅛"	1¼"	3⅝"	short dividers
1	P	⅛"	8⅛"	15"	tray bottom
1	Q	¼"	1½"	4½"	tray handle

care of here with a little sanding.

Glue the top frame together and check it against the rim for fit. Draw two diagonal lines on the underside of the top; then, glue the top to the top frame—using the diagonal lines as centering guides.

The Tray

Cut the tray pieces: front and back (L), sides (M), the long divider (N), short dividers (O) and tray bottom (P) to the dimensions given in the Cutting List. Make ⅛" X ⅛" rabbets on the inside bottom edges of the front, back and sides to receive the bottom. Cut the 3/32" deep dadoes in the front, back and long divider with a standard kerf blade on the table saw—note that the long divider has joints on both sides. Use the fence as a guide and cut the aligned grooves in each piece before moving the fence. Using a ¼" dado blade, or with several passes over a

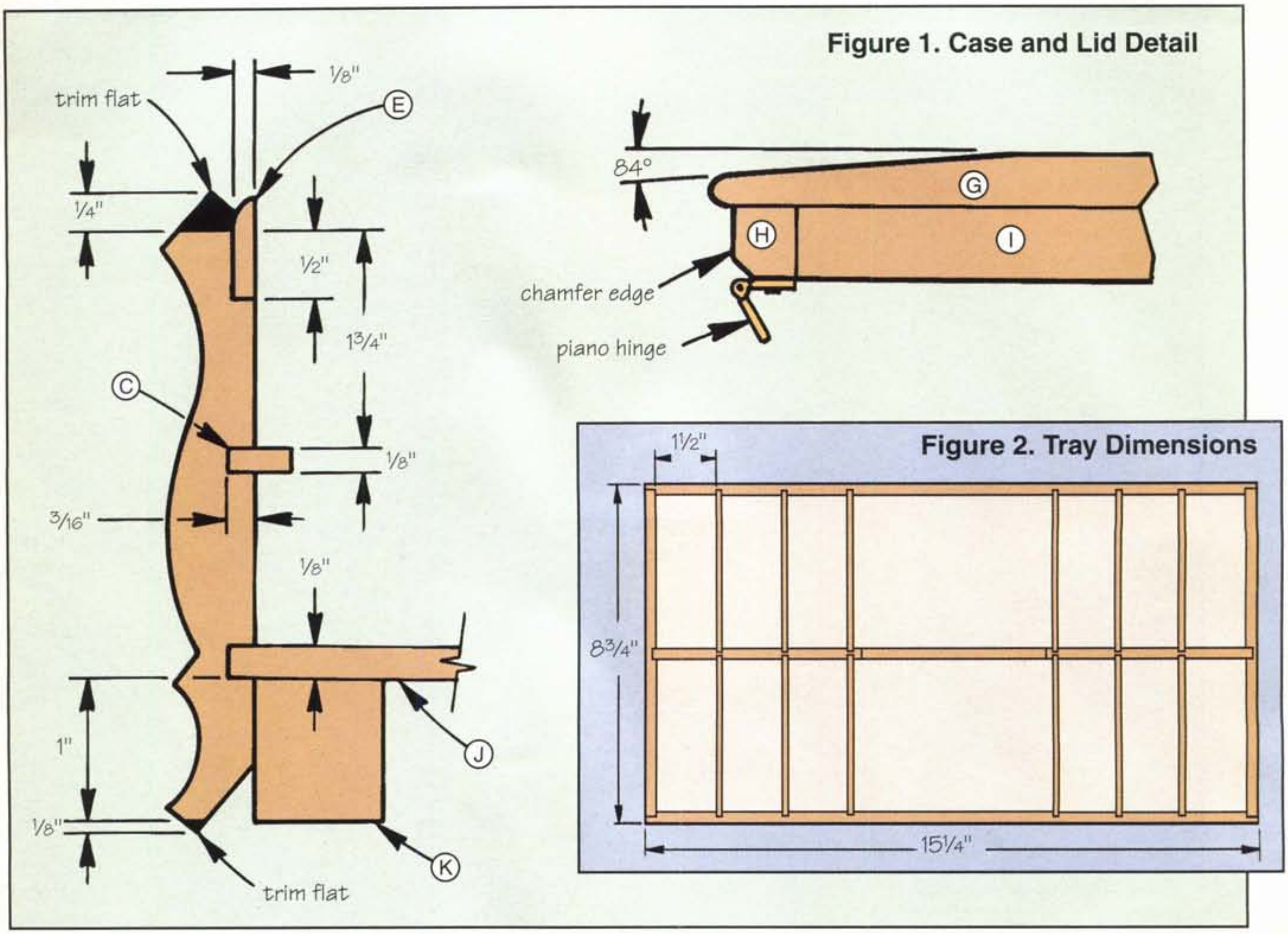
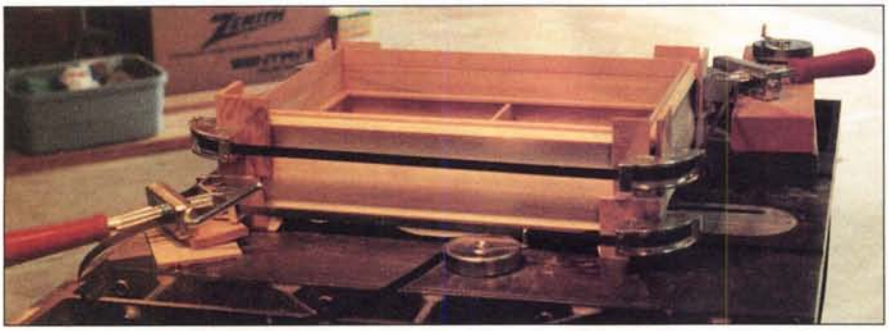


Figure 1. Case and Lid Detail

Figure 2. Tray Dimensions


To assure squareness when gluing together the case, use a band clamp and shims or frame clamps.

standard blade, cut the rabbets at the ends of the front and back pieces and the 1/4" X 1/8" deep dadoes in the side pieces.

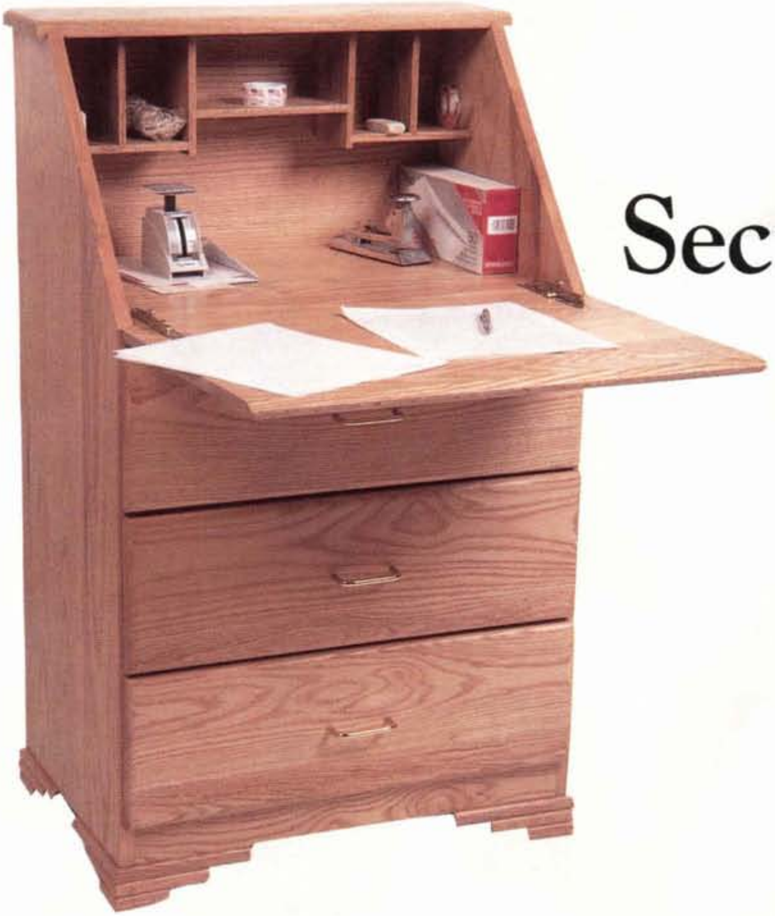
Assemble the tray with glue and frame clamps. Transfer the handle pattern from the PullOut™ Plans to a piece of 1/4" stock (Q) and cut it out. Attach it to the center divider with glue.

Hardware and Finishing Touches

The dogwood flowers were carved from 3/8" clear pine. You can create your own pattern or purchase pre–carved ornamental flourishes from The Woodworkers' Store at (612) 428-3200. Finish sand the tray, base and lid assemblies. Finish the tray with several coats of tung oil. To achieve a hard, smooth finish to the case, apply a coat of oil based primer first. After fine sanding, apply two coats of ivory colored acrylic paint. Paint the decorations with acrylic colors. When the paint has dried, apply two coats of non–yellowing, clear polyurethane.

Mount the hinge as shown in Figure 1. I used a friction lid support that I purchased at my local hardware store. The tray is shorter than the inside dimensions of the box so the lid support doesn't need to be mortised into the side. Check the movement of the lid before attaching the lid support.

After all the finishes are on, make and install the lining panels. Cut tag board to fit the areas indicated in Figure 2 and face them with 1/8" foam, covered with an attractive fabric. Attach the fabric to the back of the panels with rubber cement and glue the panels to the tray and box—rubber cement works well here also. PW



Secretary Desk

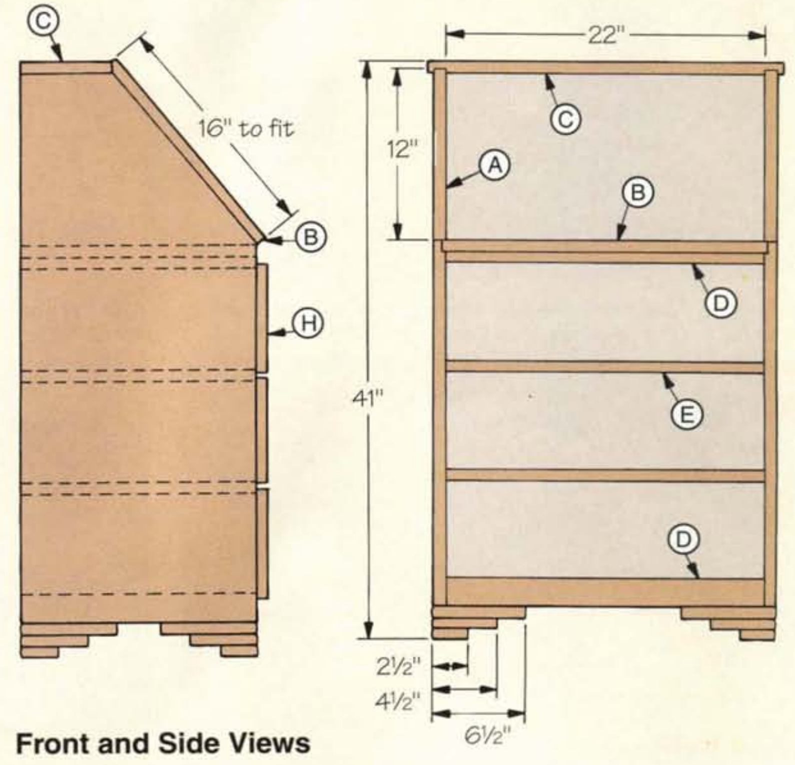
by Jeff Greef

What could be more handy for saving and writing out the bills? When you've finished piling them up, just flip the lid—papers, envelopes and check stubs neatly fall inside, out of sight and mind. It takes up little space, the cubbies and drawers provide good storage, and you get a fair size desk area to work on.

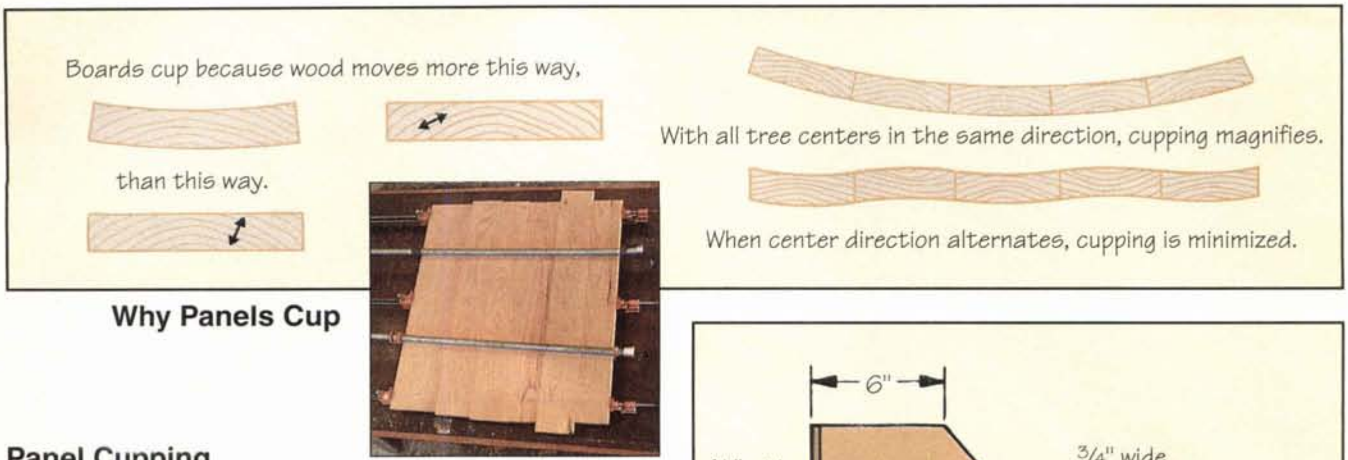
The panels are solid, easier to construct than frames with floating panels, but you must provide for wood movement. Any board will expand and contract across the grain with moisture variations. If you don't join the pieces so they can move freely, something will break. This project is a study in allowing for wood movement.

Glue up a panel for each side (A), one wide enough for the desk top and lid (B), and several for the drawers. Pieces you'll need to glue up—unless you find stock wide enough—are noted in the Cutting List coming up.

***Jeff Greef** woks wood and writes about it in Soquel, California.*



Front and Side Views


Boards cup because wood moves more this way,
than this way.
With all tree centers in the same direction, cupping magnifies.
When center direction alternates, cupping is minimized.

Why Panels Cup

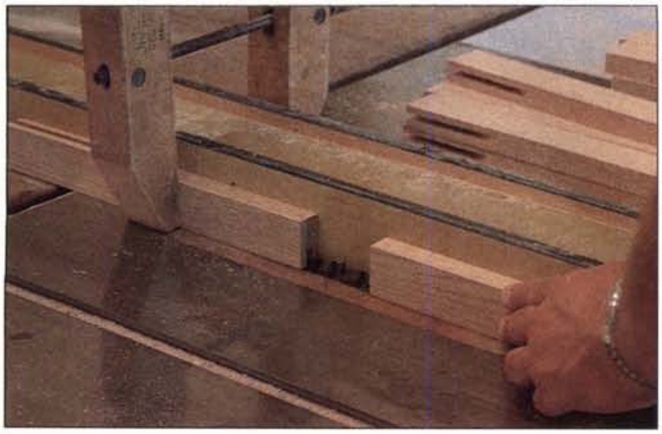
Panel Cupping

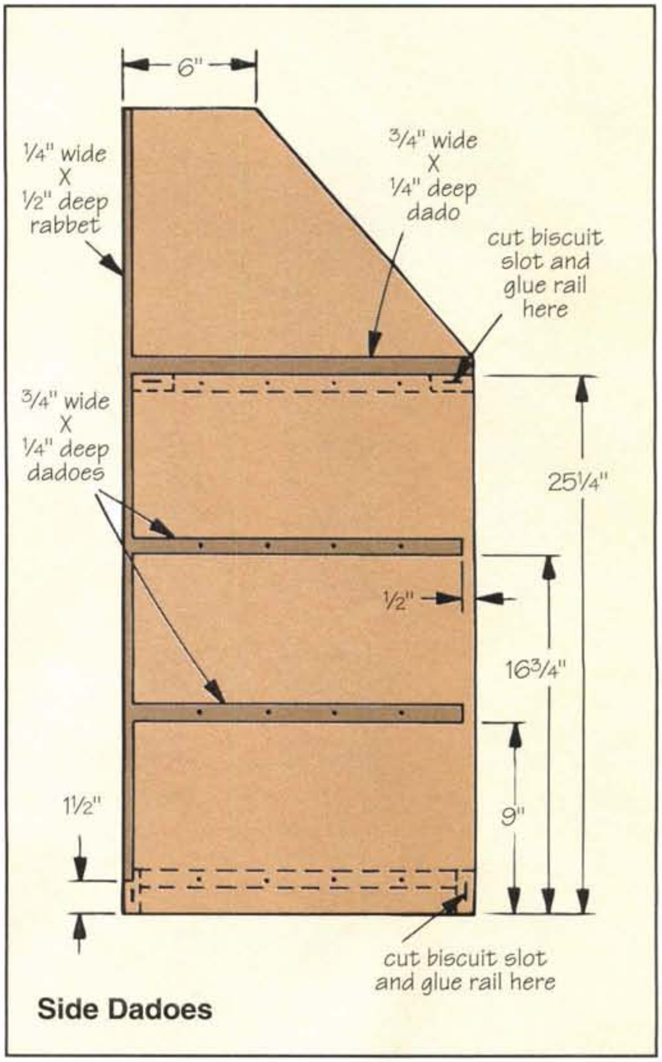
Dealing with wood movement begins with laying out the sticks for panel glue–ups. Not only will the panels tend to change dimensions along their width, but if the sticks are flat sawn they will cup slightly with moisture changes. If all the sticks in an 18" wide panel cup in the same direction, the combined effect can cup the entire panel ¼" or more. If the panel is screwed to something straight, the result could be a split panel or twisted furniture. The solution is to arrange panels so the individual sticks don't all cup in the same direction but rather alternate (Figure above).

When the panels are out of clamps, sand them flat and smooth. You're a better man than I if you can do this well. I take mine to a local cabinet shop for twenty bucks or so.

If the blade is 3/16" above the table, the tenon may be a little bit too thick.

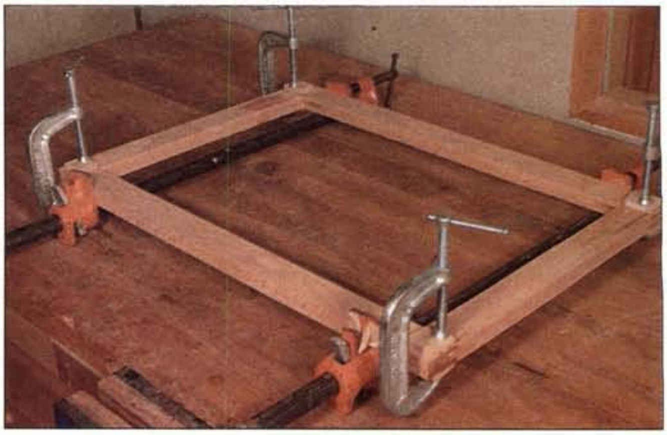
Clamp a stop on the fence to limit the length of the slot mortises you cut on the inside edges of all front and rear rails.



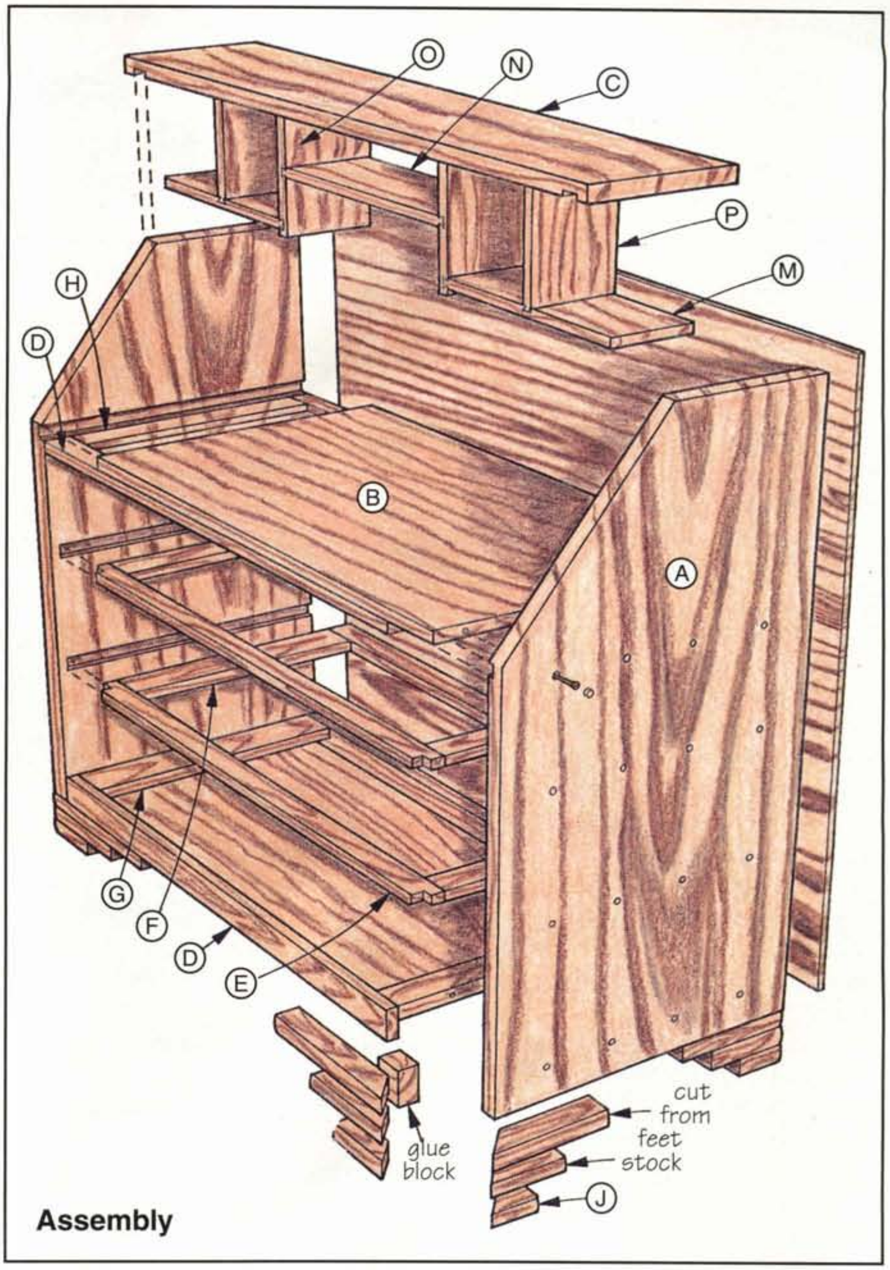


Side Dadoes

With the frame pipe–clamped, measure diagonals before adding the C–clamps.



Secretary Desk					
Cutting List					
		Finished Size			
Qty	**Part**	**T**	**W**	**L**	**Piece**
2	A	¾"	16"	38"	sides
1	B	¾"	22½"	33"	top and lid
1	C	¾"	6"	24½"	top plate
4	D	¾"	2"	22"	top/bottom rails
4	E	¾"	1½"	22½"	frame rails
4	F	¾"	¾"	13"	mid/up runners
2	G	¾"	1½"	12"	bottom runners
2	H	¾"	1½"	12"	kickers
3	I	¾"	7½"	23"	drawer fronts
1	J	¾"	1"	11 ft	feet stock
6	K	½"	6⅞"	15½"	drawer sides
3	L	½"	6⅞"	22⅜"	drawer backs
2	M	⅜"	4"	6 13/16"	cubby horizontals
1	N	⅜"	4"	8⅜"	cubby horizontal
2	O	⅜"	4"	6 7/16"	cubby verticals
2	P	⅜"	4"	6"	cubby verticals
1	Q	¼"	23"	37½"	plywood back
3	R	¼"	14⅜"	21⅜"	drawer bottoms



Assembly

Drawer Frames

The drawer frames consist of rails D and E between the desk sides, and runners F and G along them. They do double duty—as a place for the drawer above to rest and slide on, and as a kicker to prevent the drawer below from tilting when it's pulled out. There's no drawer above the top drawer to act as a kicker, so you'll install kickers (H) for it later. The desk top itself would serve, but when the lid opens it would hit the top of the uppermost drawer front, so there it must have space betwen the lid and the top drawer. This space is provided by a front and rear rail. Note that the bottom drawer frame runners are shorter than the others. This frame fits between the two bottom rails and thus has less room.

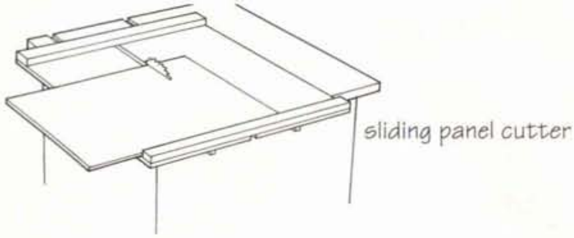
Cut the rails and runners to the dimensions in the Cutting List above. I joined the frames with slot mortises and stub tenons cut on the table saw. First set up a ¼" wide dado, ½" above the table. Clamp a stop on the fence (as shown in the corner photo on the preceding page) to limit the length of the slot to 1½" at its deepest point. This stop must have the same slot cut in it so you can locate it over the blade. Center the slot along the ¾" thickness of the pieces, cut the slots on the inside edges of two top rails (D) and the drawer frame rails (E), and on the inside face of the two bottom rails (D).

To cut the the tenons on the runners (F and G), leave the ¼" dado setup on the saw, remove the stop, and put your miter gauge on the table. Set the fence ½" from the outside of the dado, and lower the blade to about 3/16" from the table top. Cut the tenons as shown in the first photo on the preceding page, making two passes on each side to clear out the waste. With the dado at 3/16" above the table, the resulting tenon will be too thick to fit the mortise. Raise the blade a hair and recut the tenon until it's snug.

Glue up the frames by pulling them together with bar clamps, then clinching down the mortises onto the tenons with C–clamps as in the photo to the left. Check that the frames are square before you put on the C–clamps. After they're on, you can remove your pipe or bar clamps.

Carcase

Rip the sides to width and cut them to length. A good way to cut wide stock to length is with a large sliding panel cutter on the table saw.



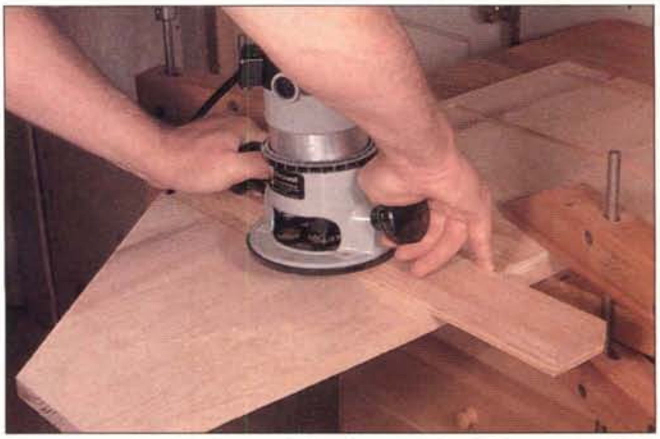
I was able to cut the width on my 10" radial arm. Use a band or saber saw to make the angled cut on the sides. Smooth the edges by sanding or hand plane—which is much faster. Don't plane against the grain!

To hold the frames and top, cut dadoes into the desk sides with an overhead bearing flush trim bit in the router (see the Figure on the next page). As the photos in the next column show, a straightedge is attached to a piece of plywood—the clamps would get in the way of the router's travel if the straightedge were clamped directly to the desk side. The ply adds space which I needed to accommodate the height of my overhead bearing bit.

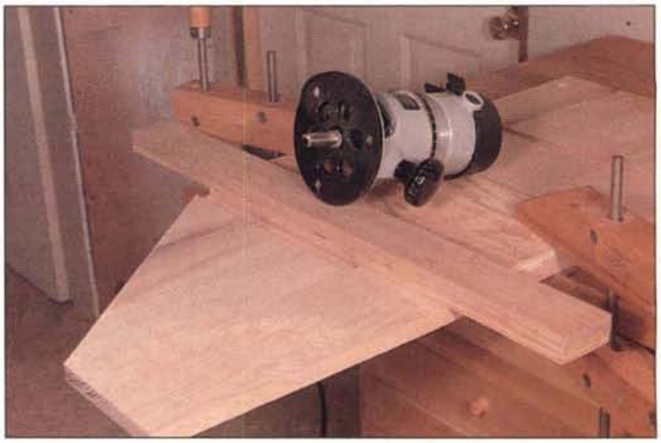
Stop the dado cuts for the drawer frames ½" short of the front edges, but cut the desk top dado through. Cut the dadoes ¼" deep.

Notch the front corners of the drawer frames to fit around the stopped dadoes. Set up a ¾" dado as shown in the photos below. Set the fence against the dado cutter so it will cut along the full thicknesss of the drawer frames—screw a board to the fence to protect it. Clamp on a stop as you did when cutting the slot mortises in the frame rails. The cut only needs to be long enough for all surfaces to clear when the frame goes into the dado in the desk side. The depth of cut is critical—make it exactly the same as the dado depth so the front rail ends cleanly butt the inside face of the desk sides ahead of the dado.

Join the four top and bottom rails (D) to the sides with dowels or biscuits. If you use dowels, accurate drill press setups will be necessary to bore the holes in the sides. A dowel jig will suffice for the the rail ends. For biscuits, join the lower rails with a single setup of the biscuit joiner fence (first photo next page). Locate the biscuit about ⅛" from the inside of the bottom rails—on the back bottom rail you'll cut a ¼" rabbet on the outside of the rail to take the plywood back, and the biscuit must be out of the way.



The plywood under the straightedge was the thickness needed to lift my router bit enough to cut ¼" dadoes in the side panels.



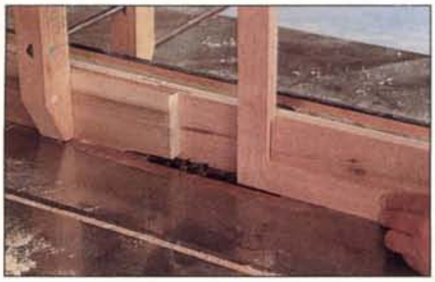
Note the straightedge attached to the plywood—clamps directly on the straightedge would get in the way of the router.

To attach the top rails horizontally along their faces requires an extra step. You can't cut the slots for the top rails in the desk sides by resting the joiner's fence on the side's edge, as you did for the bottom rails. Position a fence along the desk side as in the photo below, and place the butt of the bottom of the machine against the fence. To locate the slot accurately you must account for the distance from the cutter to the outside face of the machine, which butts against the fence. On mine this measures 13/32", which required some math to figure exactly where to locate the fence.

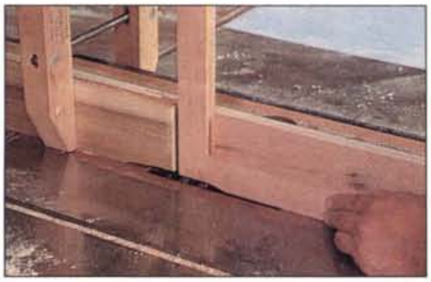
Locate the rear top rail ¼" forward of the desk side rear edges, and out of the way of the plywood back.

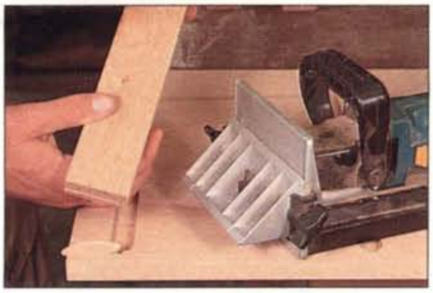
Cut rabbets in the rear edges of the desk sides for the back, and in the top outside edges of the rear lower rail. Cut them on the table saw with a dado (or router and ½" rabbetting bit). Don't cut the rabbet all the way through the bottoms of the sides—stop where the rab-

Set the cutter against the fence so it cuts along the full thicknesss of the frames.

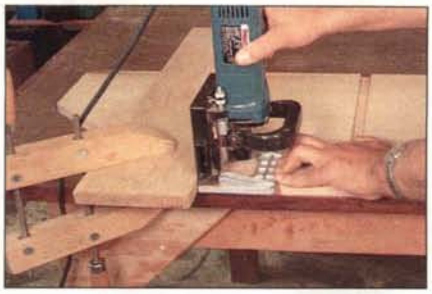


You'll need to screw a board to the fence so the ¾" dado cutter doesn't mar it.

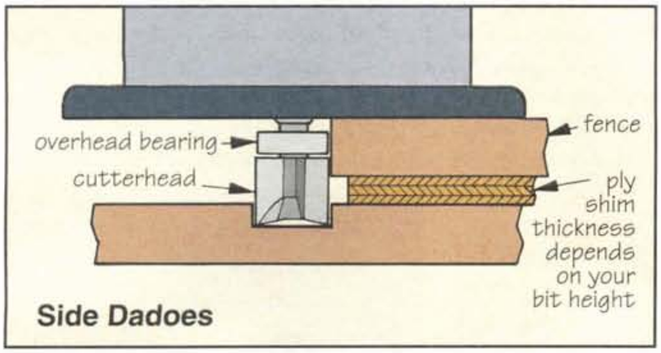




A single setup will do the bottom rails—cut the slot at least 1/8" from the inside edge of the back bottom rail to clear the back panel rabbet you'll cut later.



Locate the clamped fence for the other rails by measuring carefully from the cutter to the tool's outside face (which will butt against the fence).



Side Dadoes

bet on the rear lower rail begins. On the table saw, start in the middle of the panel for one side, and stop the cut in the middle for the other. Wait for the blade to stop before lifting!

Cut the desk top to fit in its dado, before assembling the carcase. The only parts that get glue are the biscuit joints joining the rails to the sides, and if you wish, the desk top to its sides. Don't glue the frames to the sides. Cross-grain gluing over a wide panel will fail because the panel will expand and contract more along its width, than the runners will along their length. You can glue the desk top to the sides because their grains run in the same direction and will stay aligned.

So how do you join the runners and sides so the panel can move? Use screws with holes larger than their shanks. Panel movement won't bear against the shank directly. Glue the rails to the desk top pieces and assemble the carcase, placing the frames in their dadoes. Scribe lightly across the sides where the screws will hit the centerlines of the runners. Drill holes for four screws in each runner (see the Figure). Set the countersink just deep enough to glue a plug over the screw. Then use a larger bit to expand the diameter of the hole on the desk side by half the difference between the screw shank and the screw head. Don't make the hole too large or the screw head can't grab. Set the screws and glue the plugs in place.

You can glue the top in, but endgrain gluing isn't very reliable, so screw it down too. Make the hole depth slightly less, since you're going into endgrain.

There is one other accomodation you must make for movement of the sides—the length of the runners. Be sure the total length of the drawer frames, front to rear, is 1/16" or so smaller than the space the frames fit in. If the sides shrink, they won't compress the back against the ends of the drawer frames, in which case the frames would actually push it out of its rabbet.

After the carcase is out of clamps, install kickers (H) under the desk top for the upper drawer. Install with screws in the same way as you did for the drawer runners.

Drawers and Cubbies

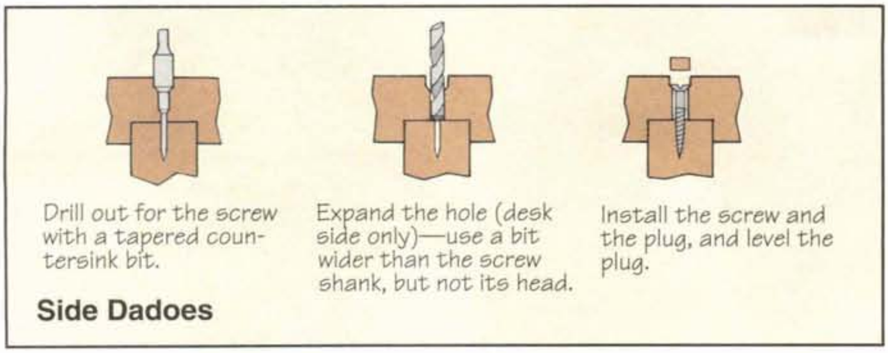
The advantage of dovetails is that the parts are mechanically locked together. You can achieve the same effect in less time with router-cut sliding dovetails. This project uses sliding dovetails to join the drawers together as well as to join the cubby parts to each other and to the top plate.

Start by cutting the dovetail slots in the drawer fronts (H) and in the rear end of the sides. Set up on the router table as in the first photo on the next page. Stop the cut 1/4" from the top of the drawer fronts by placing a clamp on the fence as shown. To stop the cut on the other side you'll need to move the clamp to the other side of the fence.

To cut the dovetail you'll need to hold the piece upright while it goes by the cutter. Make a tall fence for the router table as in the second photo, next page, to hold it. Lower the bit in the table a hair, and cut on each side to form the dovetail shape. Test-fit pieces as you adjust the fence. The fit will vary greatly with minor changes in the fence because the change happens on two sides, doubling the effect. Move the fence in very small amounts by relieving some—but not all—pressure on one of the clamps that hold it to the table and tapping it with a hammer. The tenon should fit without having to bang it in, but with little or no slop in the joint.

Cut 1/4" dadoes in the bottom inside edges of the drawer front and sides (I and K), 1/2" up from the bottom. Don't cut them on the drawer backs (L). Glue and slide the drawer sides in the slots in the drawer front until the bottoms (R) of both pieces are flush. Then slide the plywood bottoms into their dadoes in the sides and fronts. Glue and slide the back in place. To support the plywood at the drawer back, glue a 1/2" X 1/2" X 4" scrap strip on the inside of the drawer back, under the plywood.

Cut the dovetail slots in the top plate (C) for the cubbies (M, N, O and P) to hang from as shown in the third photo, next page. A router table with a miter gauge makes aligning cuts easy. Or clamp a fence to the top plate as

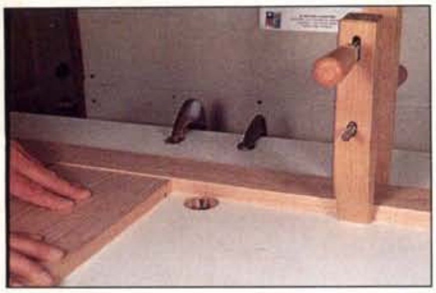


Drill out for the screw with a tapered countersink bit.

Expand the hole (desk side only)—use a bit wider than the screw shank, but not its head.

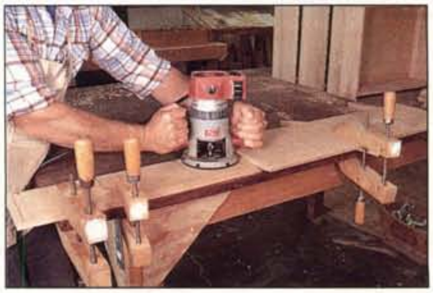
Install the screw and the plug, and level the plug.

Side Dadoes



Cut the dovetail slots in the drawer fronts and in the rear end of the sides—stop the cut ¼" from the top of the fronts.

To cut the slots, make a tall fence to hold the piece upright while it passes the cutter. Fit test pieces as you adjust the fence.



Cut dovetail slots in the top plate for the cubbies by clamping a fence to the plate and running the router against it.

shown, and run the router base edge against this edge. As for biscuit cuts in the middle of a board, measure from the cutter to the tool edge to locate the fence.

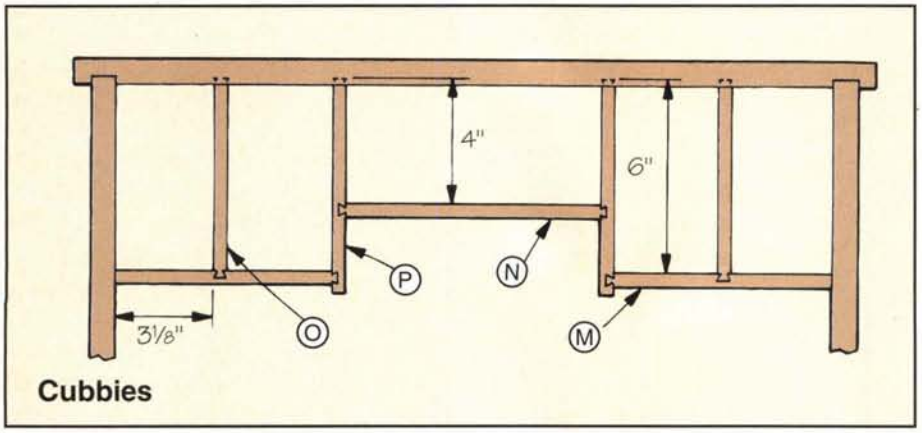
Cut two dadoes ¼" deep X ¾" wide in the ends of the top plate to join it to the sides, as well as a stopped rabbet in the rear for the plywood back. Glue and assemble the cubby structure on the top plate. Flush the rear of the structure to the inside of the rabbet for the ply. Place the top plate on the desk sides and screw in place. No need for wider shank holes because, as with the desk top, the top expands and contracts with the sides.

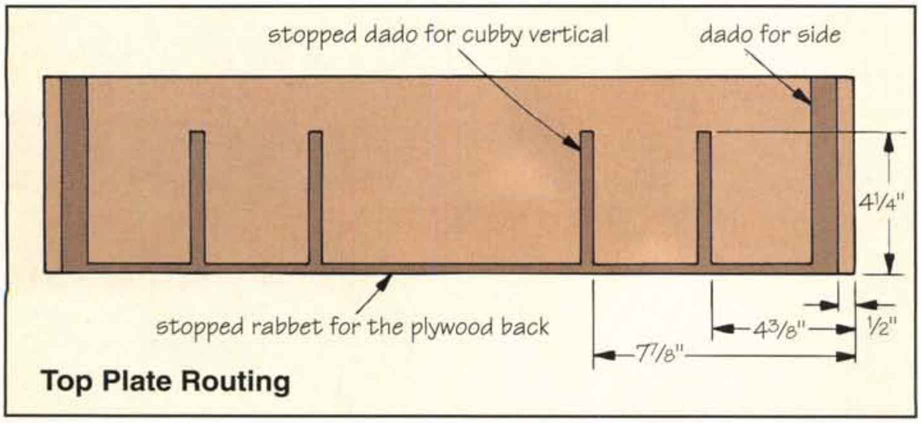
Base and Hardware

Make the pieces by rounding over the edges of long pieces of stock; then cut them shorter. Don't give the edges a full roundover, however. Lower the bit in the table about 30% as in the Figure to achieve a softer effect.

To cut the feet pieces, first cut miters on the ends of long stock; then cut the small pieces to length. Don't try to cut miters in 2½" pieces. Stack the feet directly together on the desk bottom, then glue and screw the middle ones to the long ones until all are in place. Locate the screws carefully so you don't hit the ones below. While the desk is upside down, glue and screw corner blocks where the bottom rail and desk sides meet. Also install corner blocks behind the miters on the feet.

You'll need special desk lid hinges to keep the lid from going past the horizontal when opened. I purchased mine from The Woodworker's Store, 21801 Industrial Blvd., Rogers, MN 55374 (part no. 29769). To install them, place one on the desk top in position and trace around it with a sharp pencil. Then outline the cut with a chisel and carefully clean out the waste. A carving gouge is handy for cutting the curve end of the hardware. Cut the mortise so the hardware is flush with the desk top. Repeat the procedure on the lid. Notice that the center of the hinge pin should come to the front upper edge of the desk top.



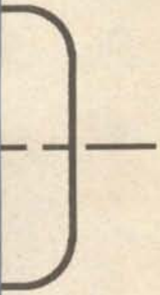

stopped dado for cubby vertical
dado for side
4¼"
stopped rabbet for the plywood back
4⅜"
½"
7⅞"
Top Plate Routing

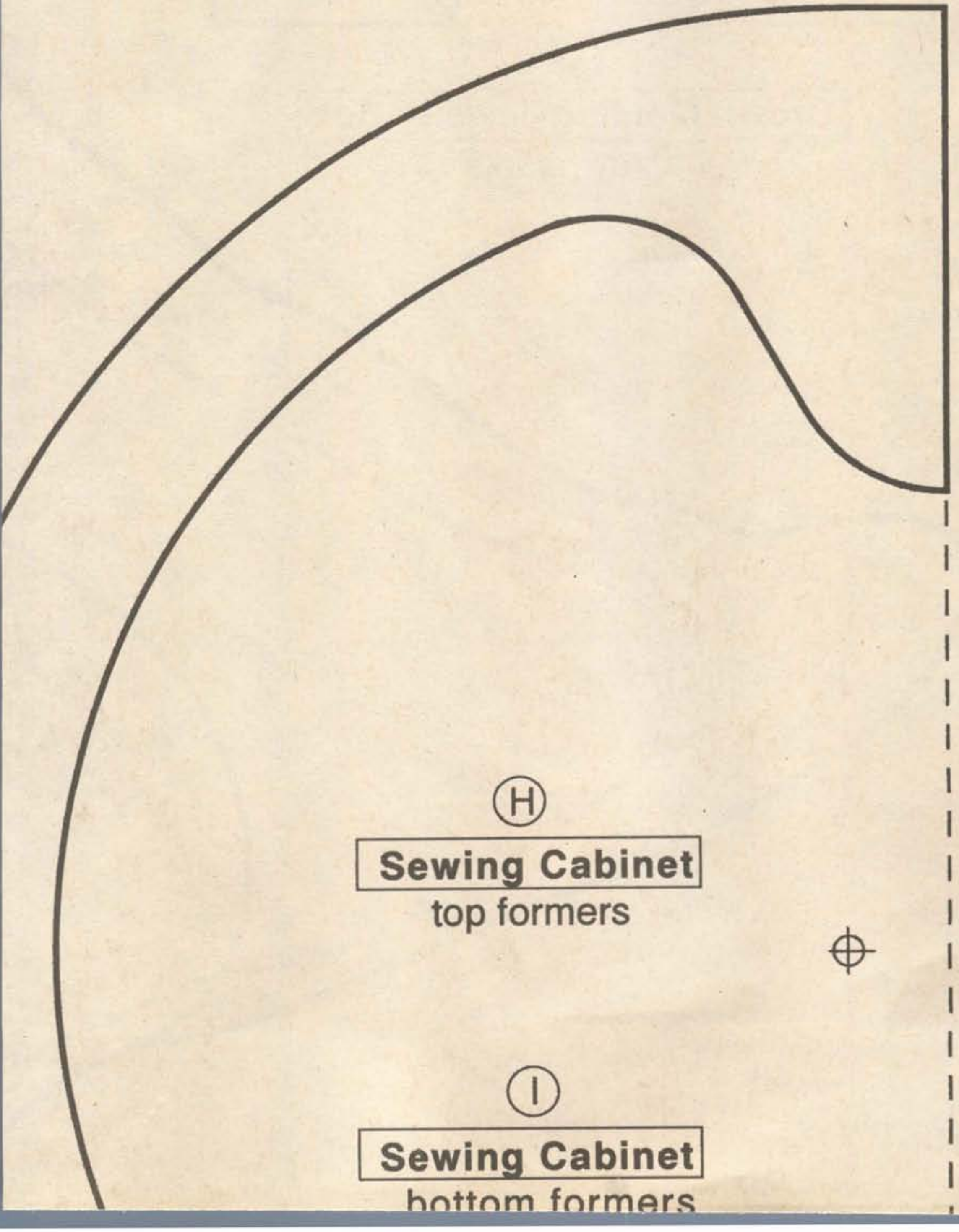
Final Details

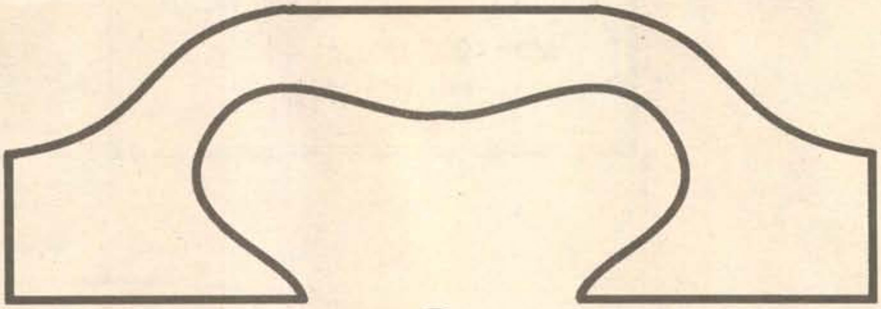
Once the lid is fitted to its hinges, make the final cuts on its outside edges to fit it to the top plate. Close the lid and scribe the angle and location on its upper edge. Remove the hinge screws and cut the angle on the table saw. Round over the drawer fronts and desk lid with a ⅜" roundover bit. Cut and fit ¼" hardwood veneer plywood to fit in the rabbets in the back. Nail in place.

Polyurethane is fine for this practical piece—it's durable. Give it two coats, sand with 400–grit, and polish with extra fine steel wool before a coat of furniture paste wax. PW

Popular Woodworking No. 72
May 1993 (pages 43-58)
PullOut™ Plans



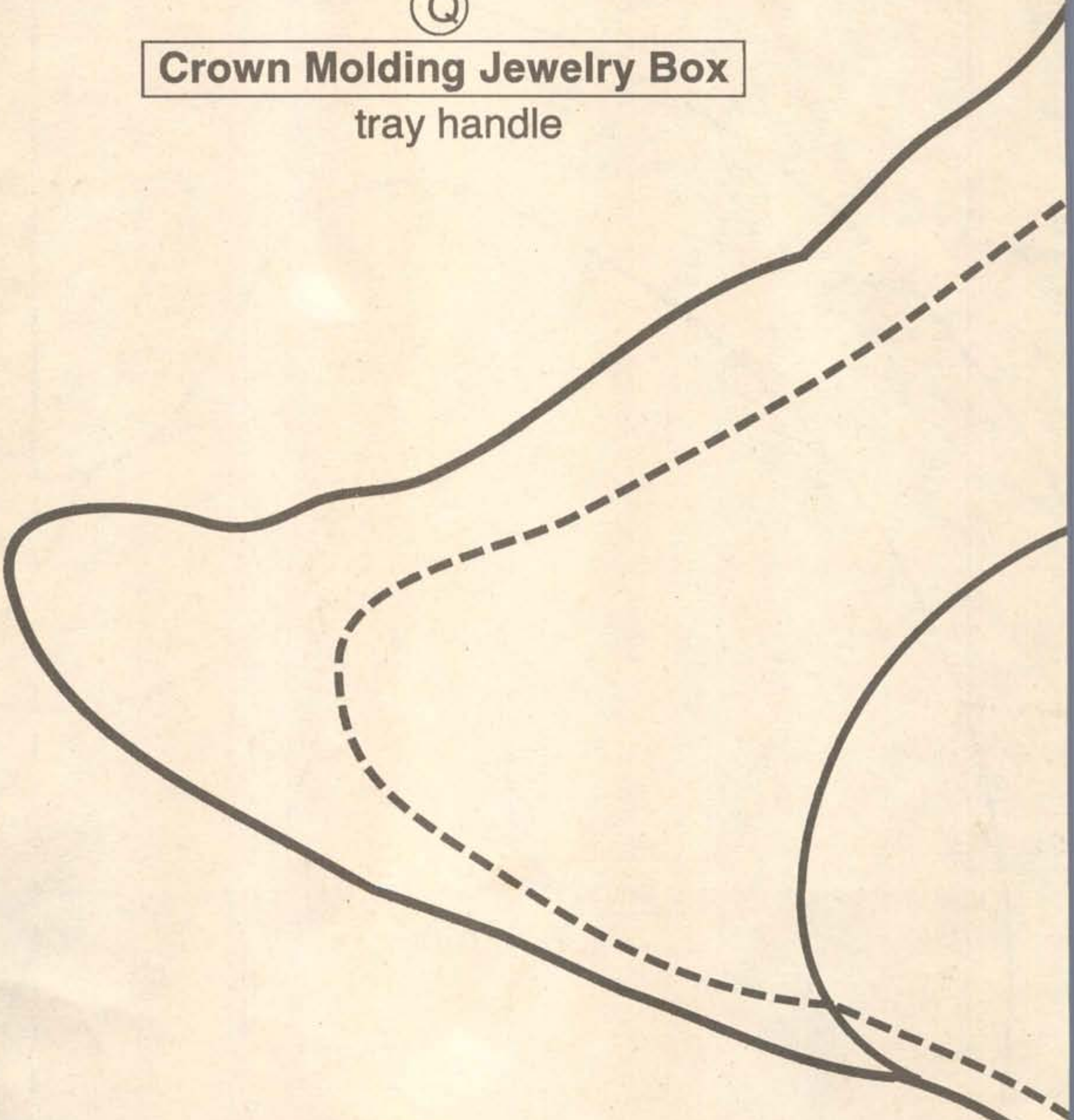


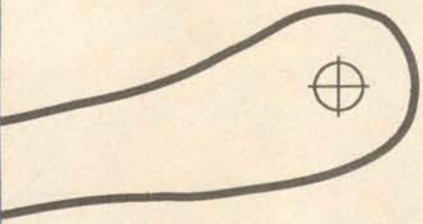


Q

Crown Molding Jewelry Box

tray handle

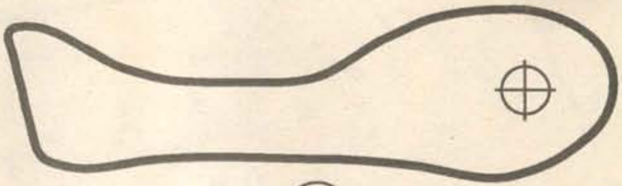




Ⓒ

rse Push Toy

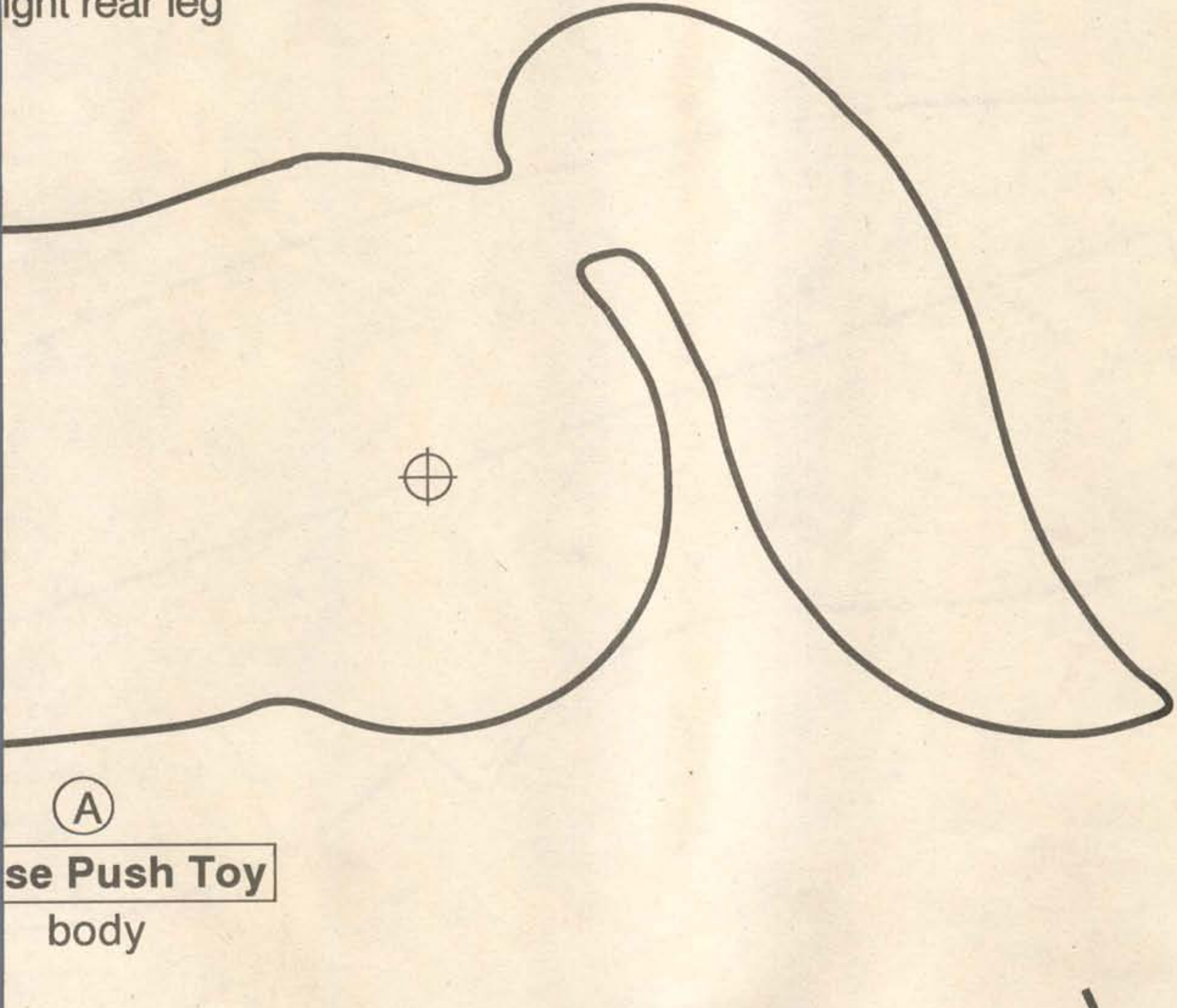
ight rear leg



Ⓒ

Horse Push Toy

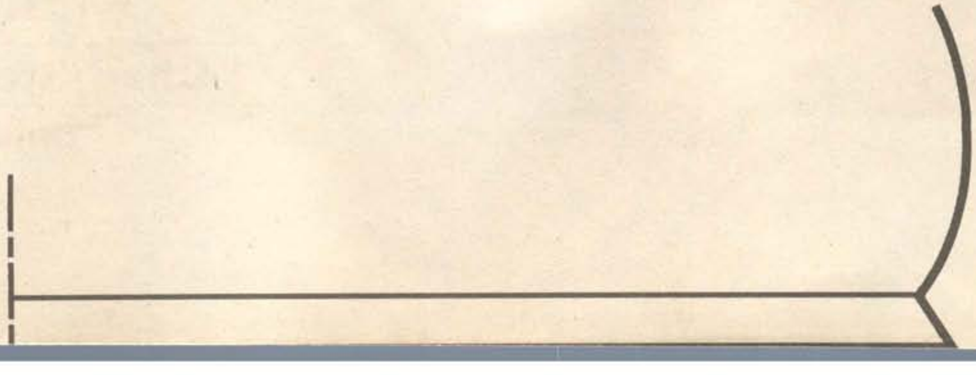
left rear leg

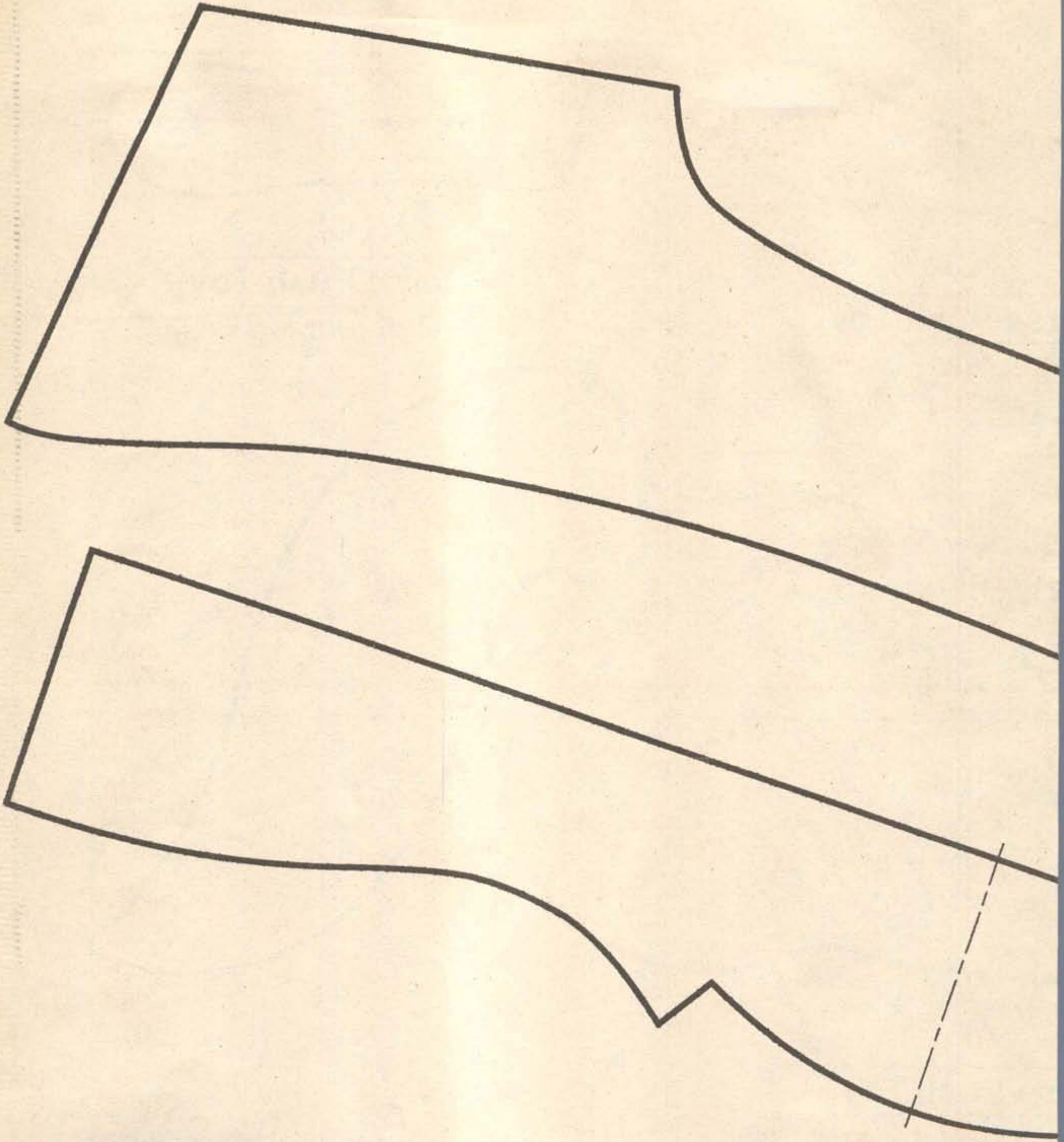


Ⓐ

se Push Toy

body





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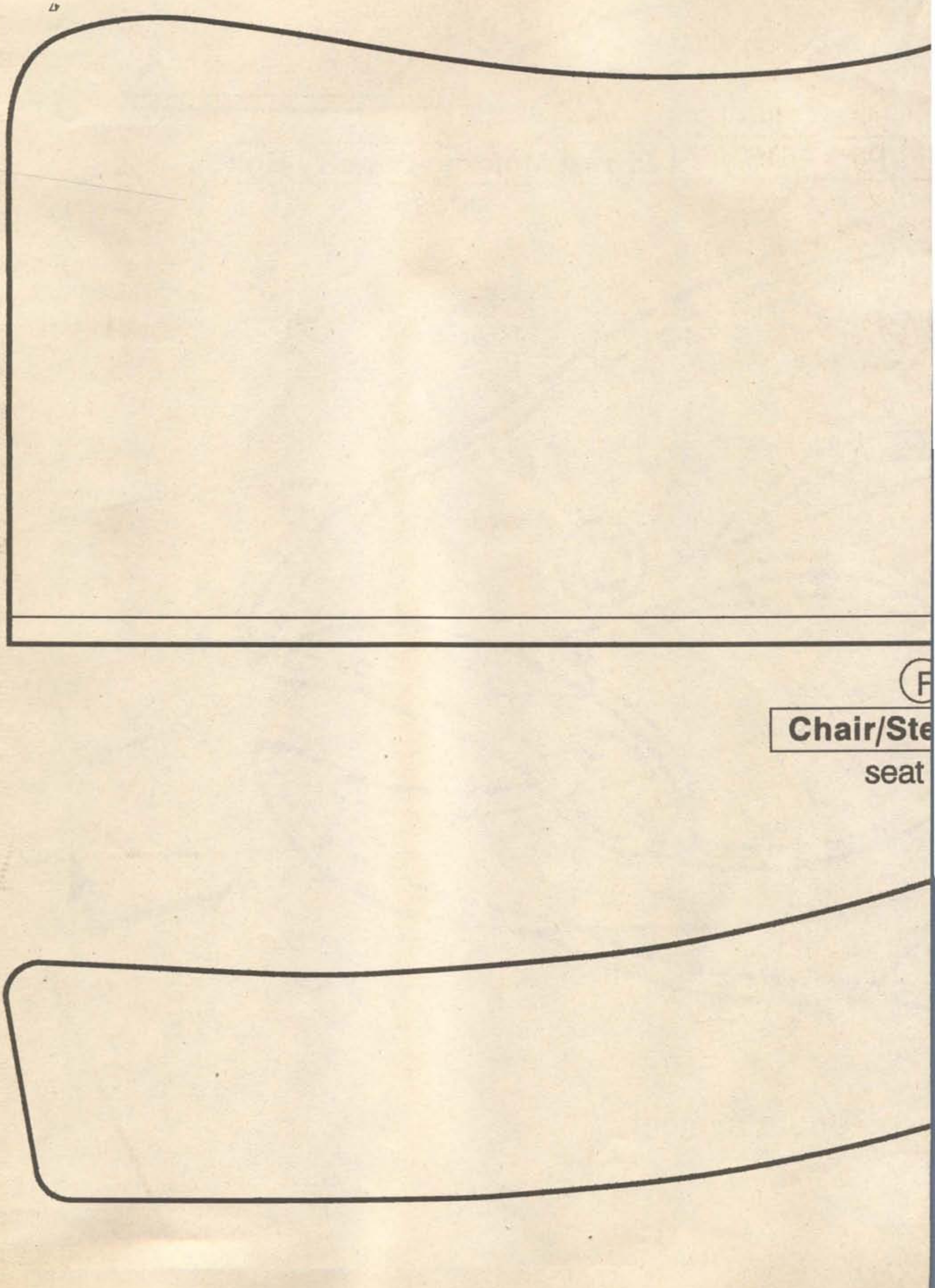
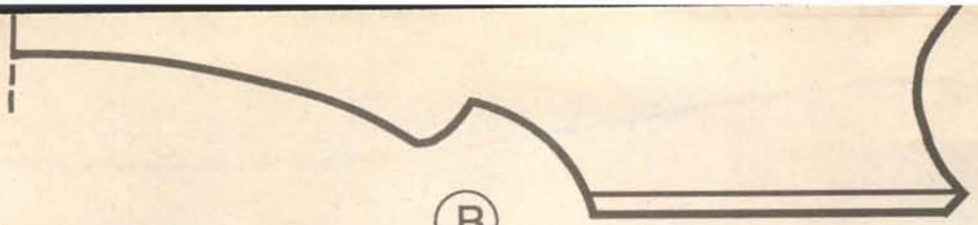
Chair/Step Ladde

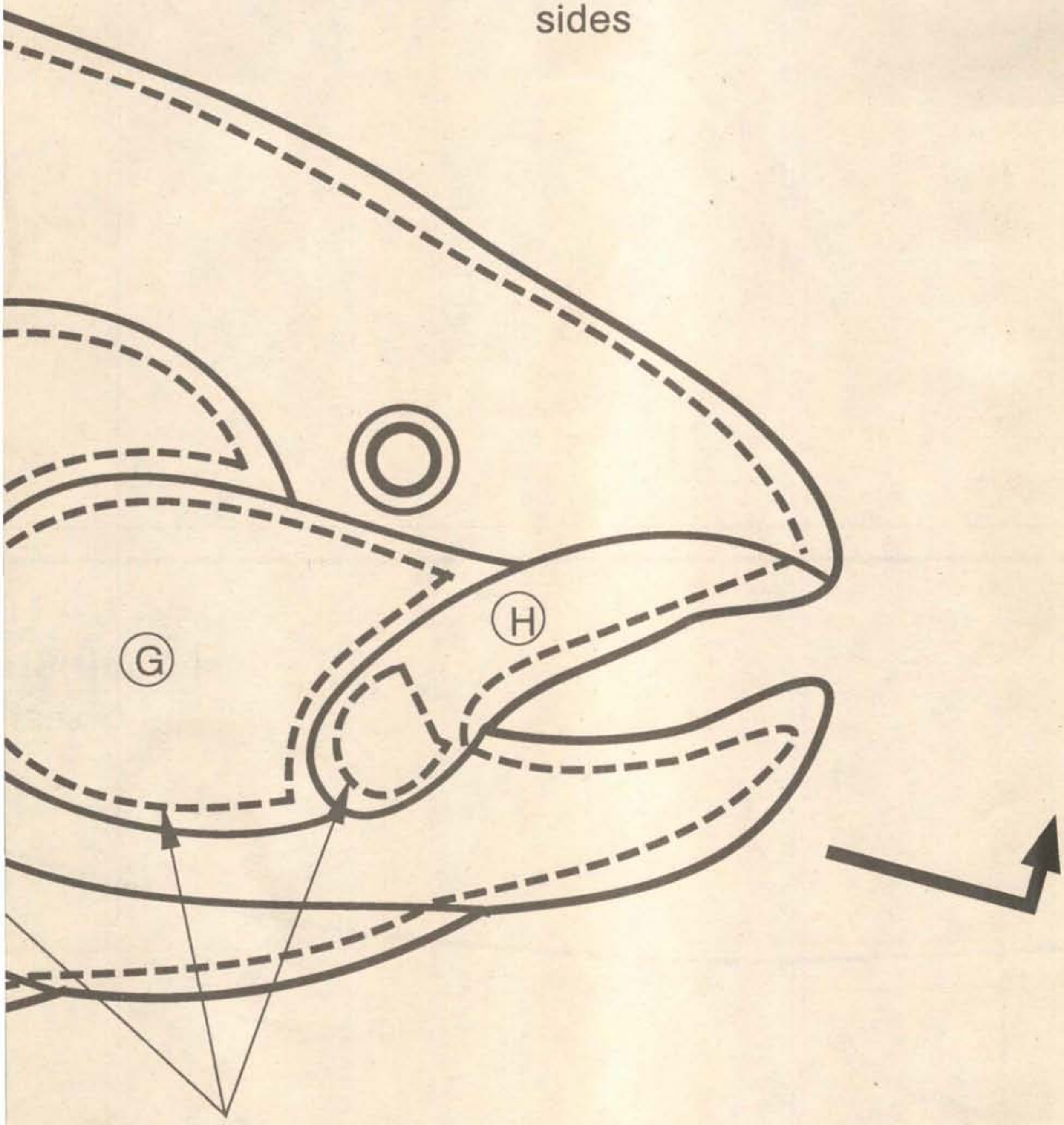
front brace

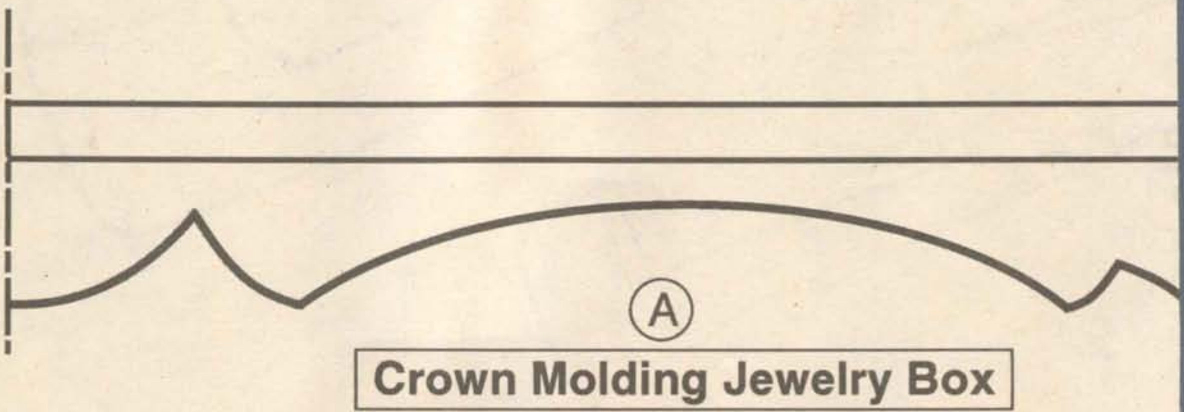

F
Chair/Ste
seat



Crown Molding Jewelry Box

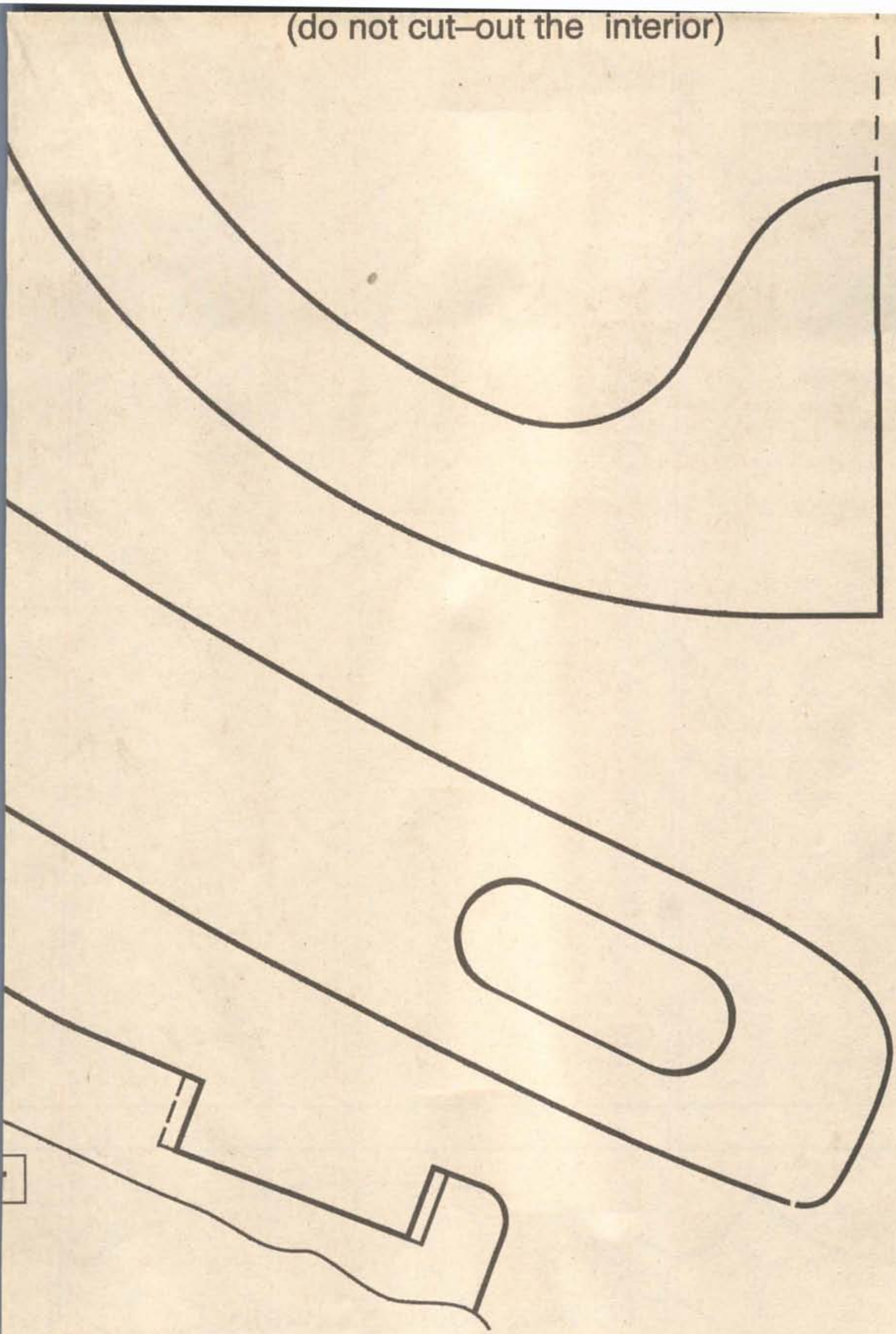
sides



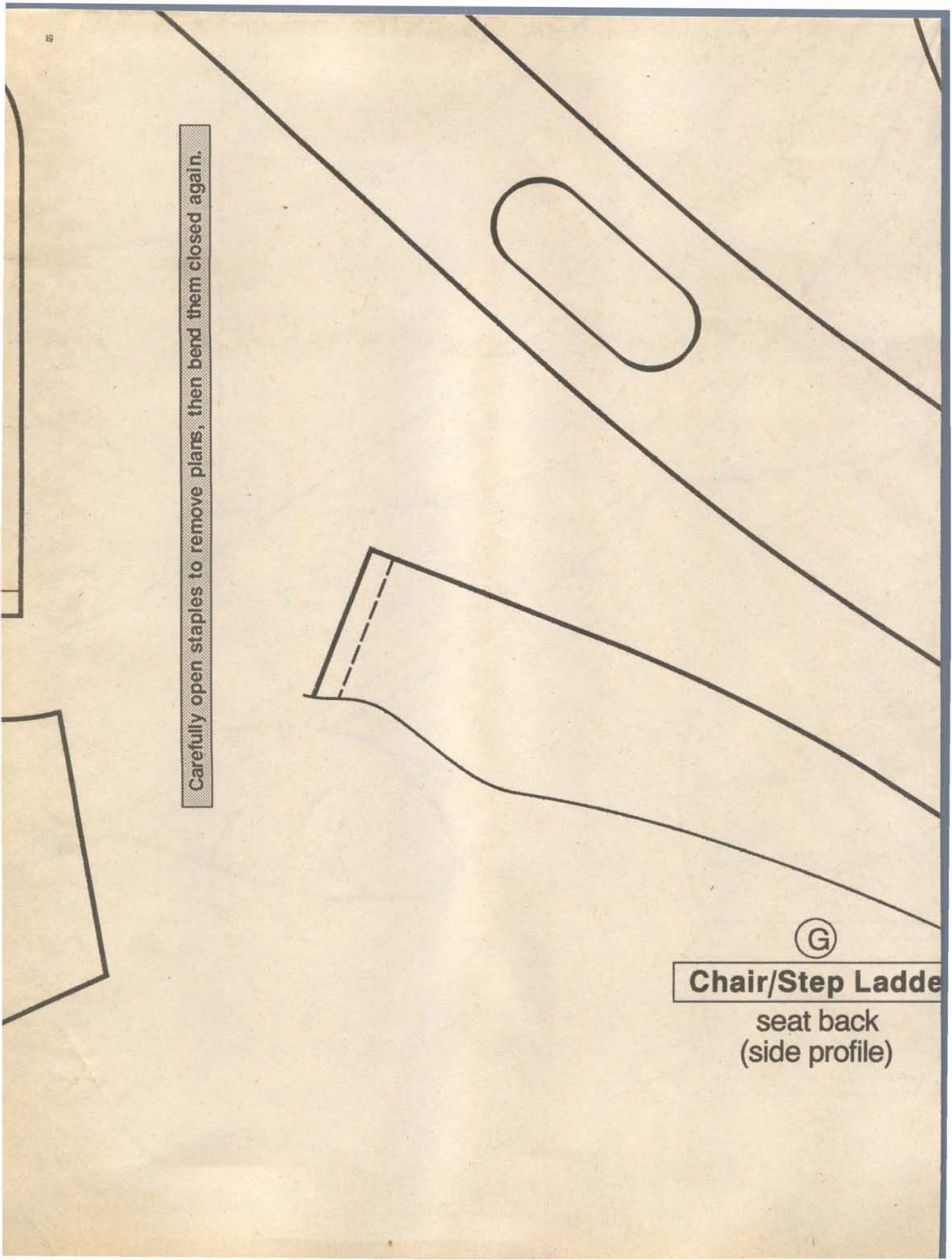


Crown Molding Jewelry Box

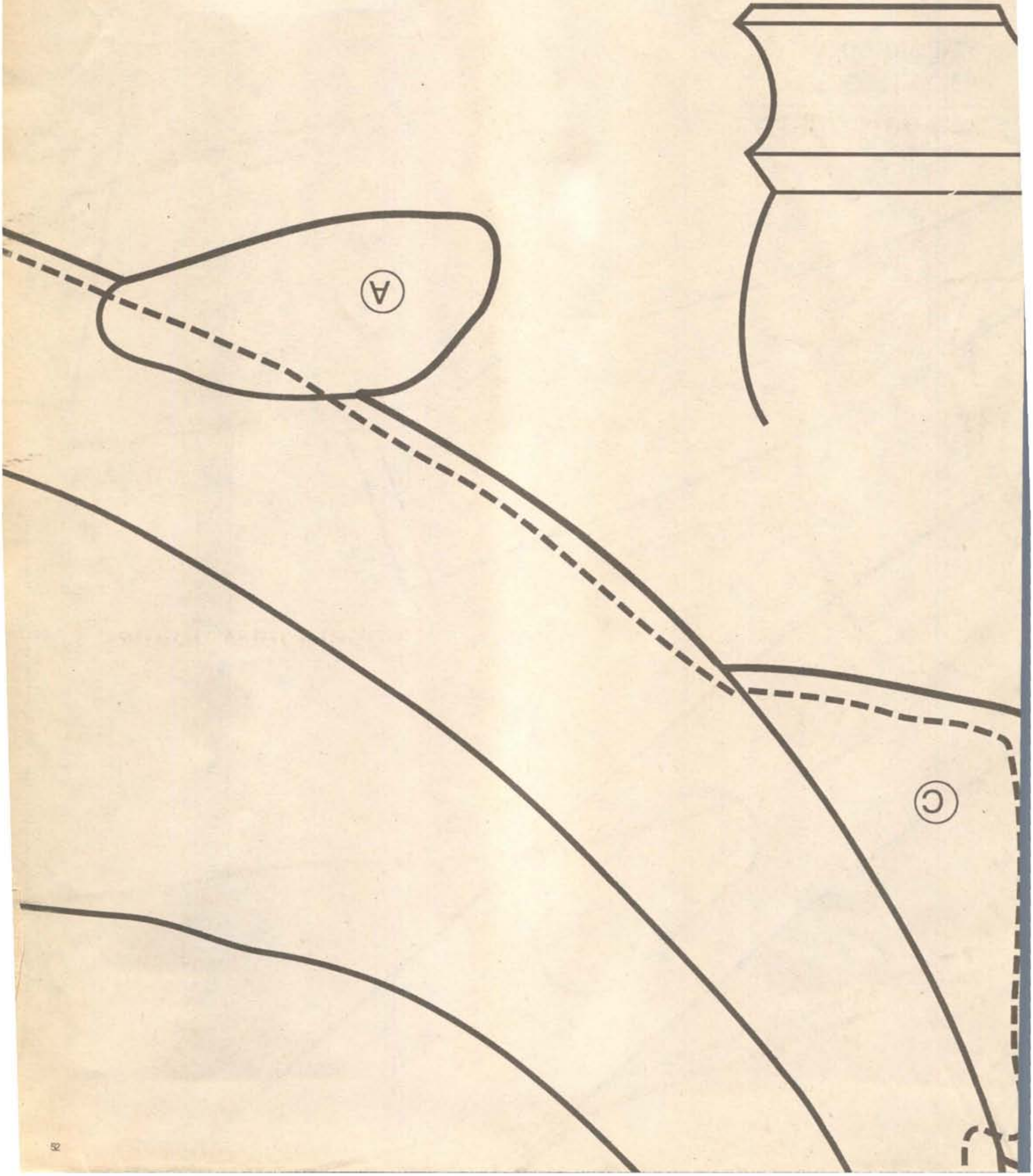
front, back

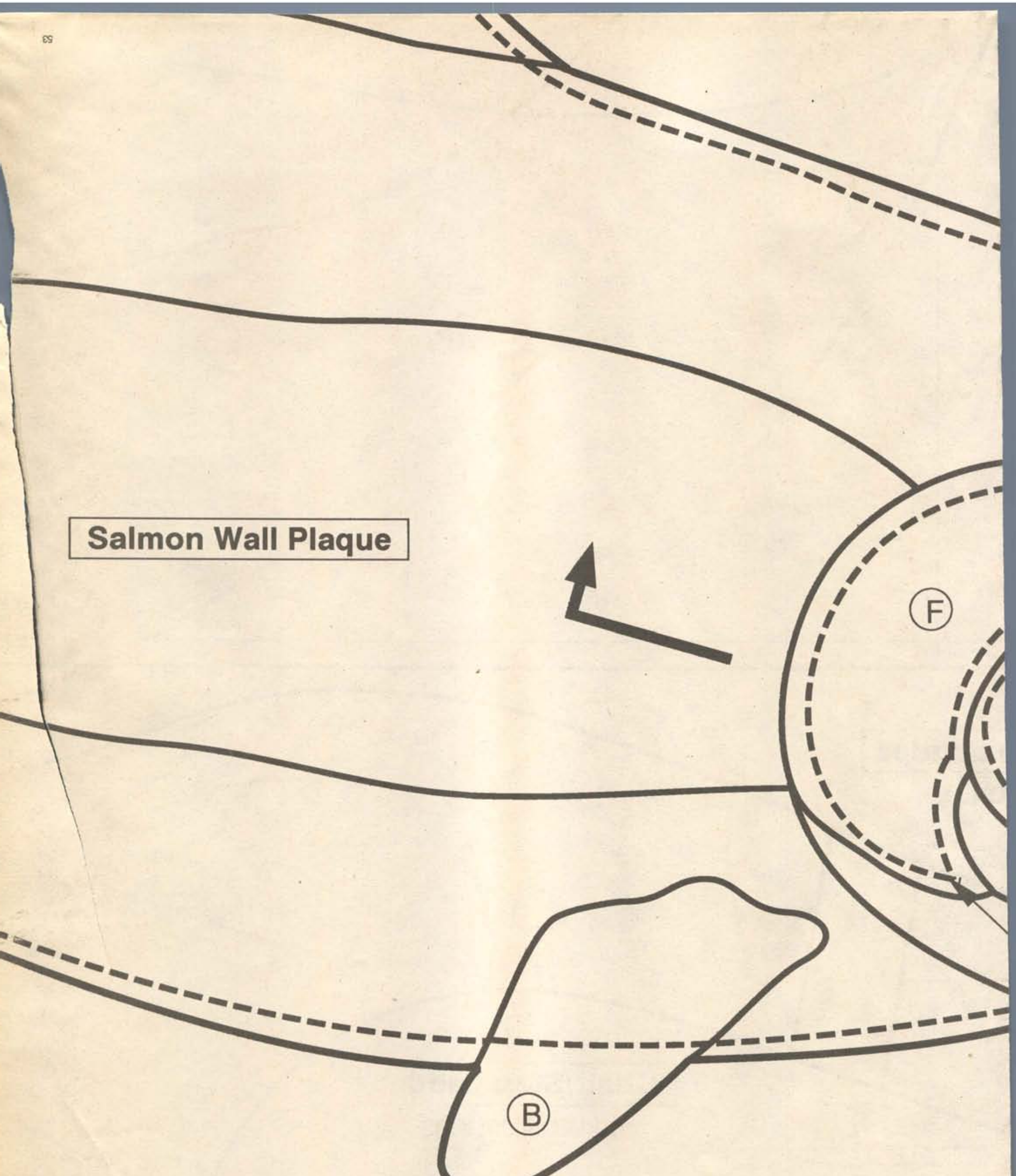


(do not cut–out the interior)



Carefully open staples to remove plans, then bend them closed again.


A
C


Salmon Wall Plaque
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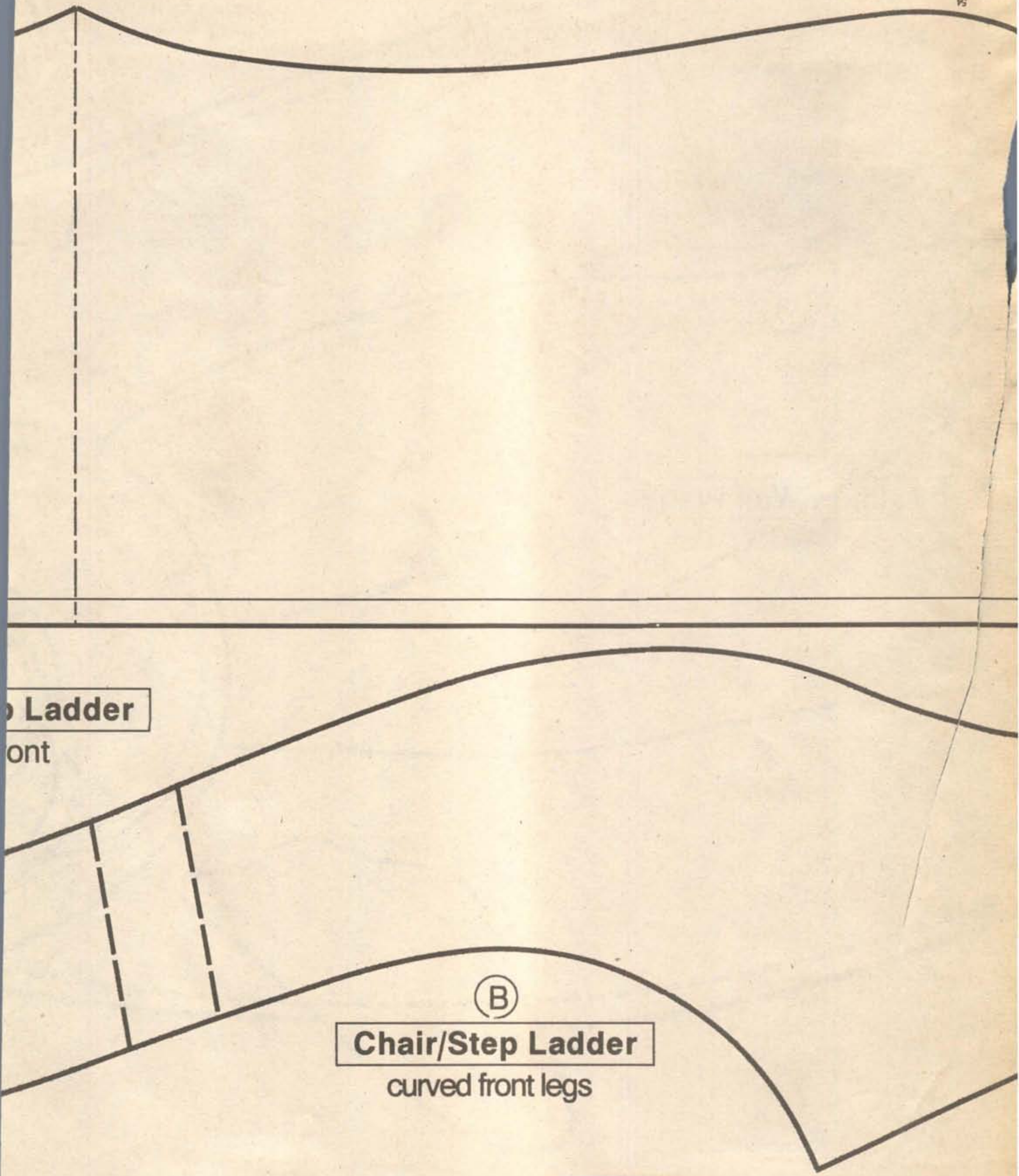
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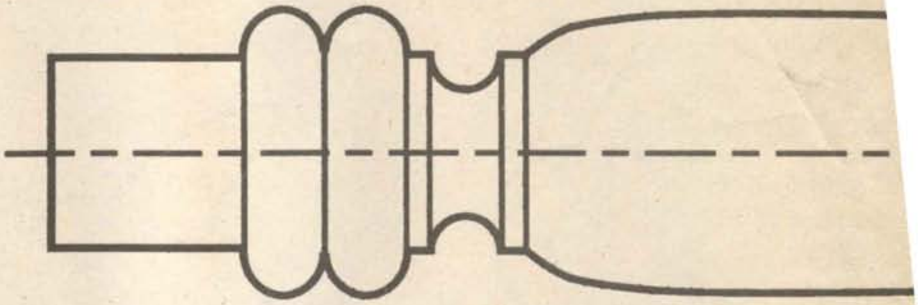
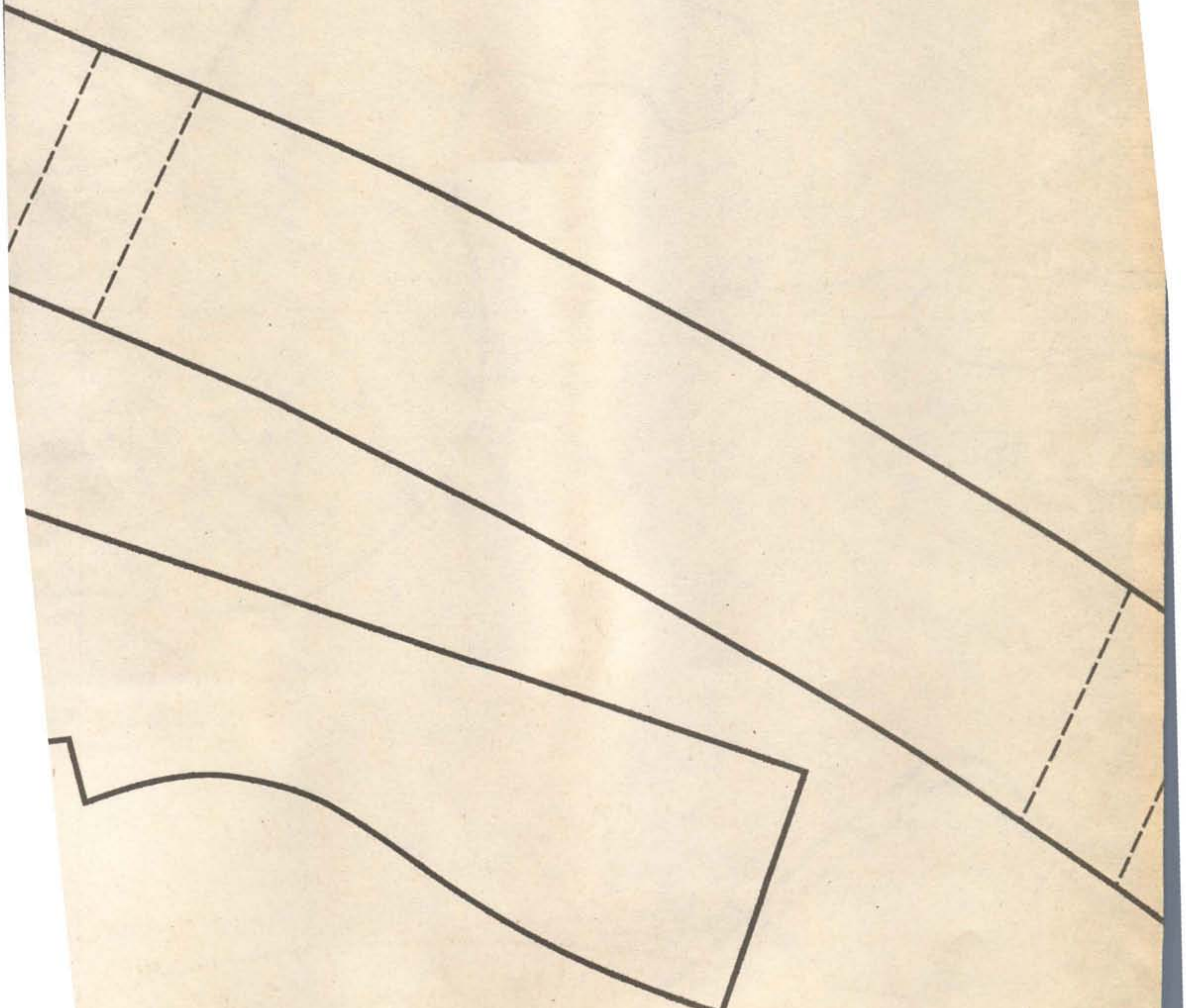
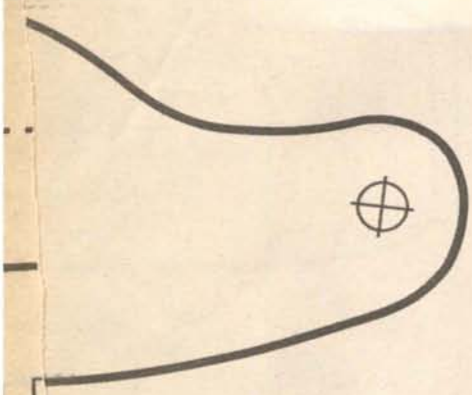
B
Chair/Step Ladder
curved front legs







ush Toy

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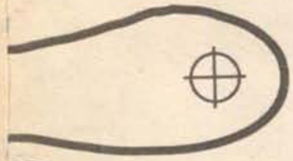
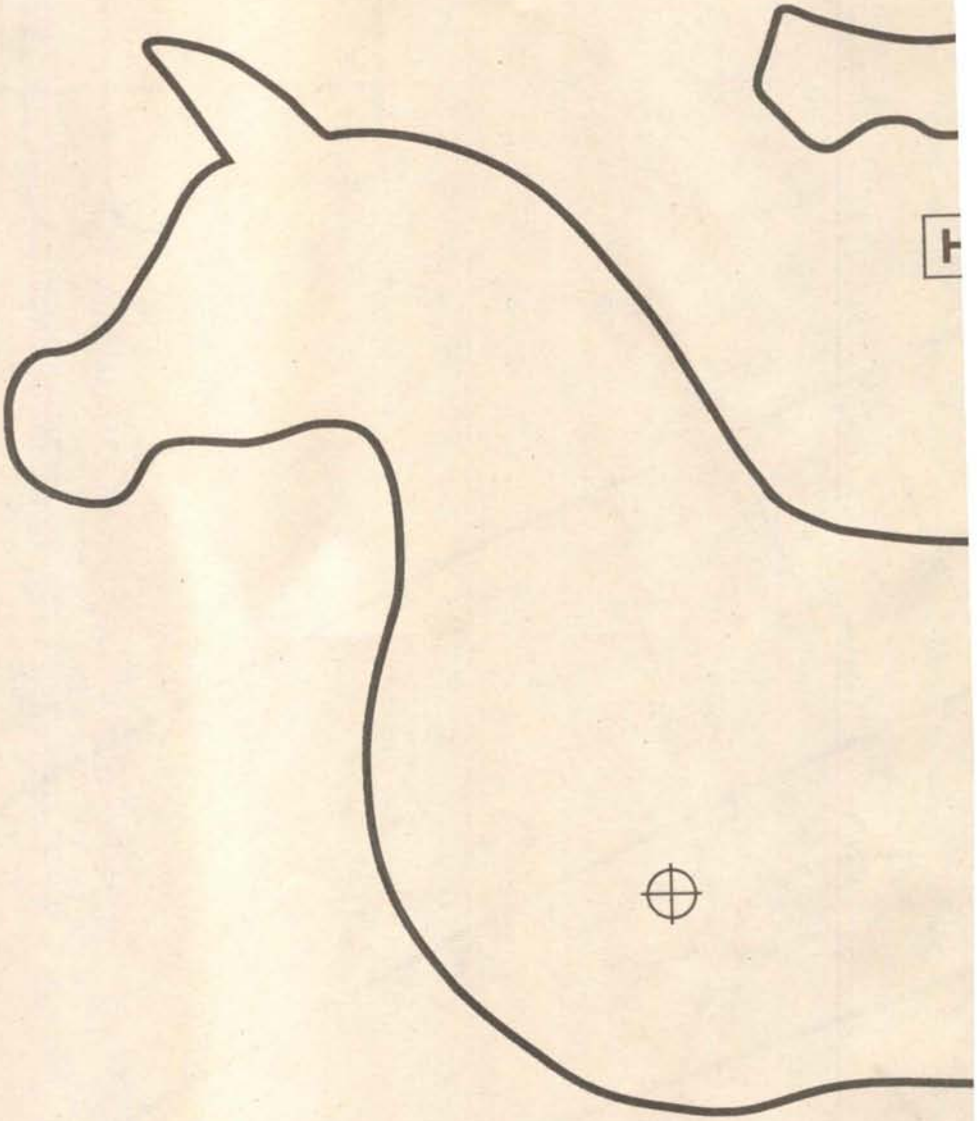


Push Toy

t hooves



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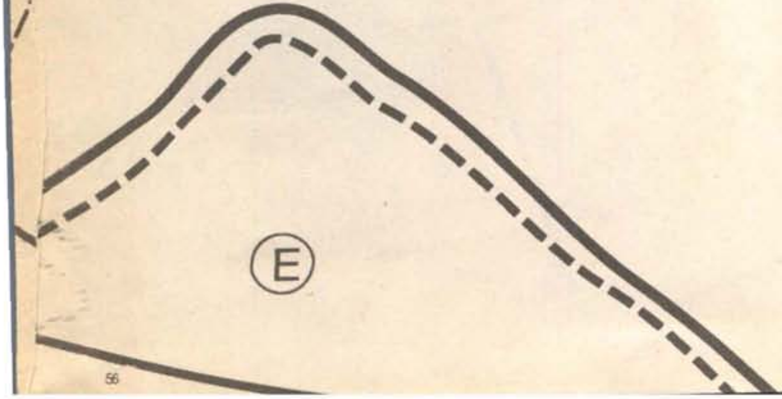

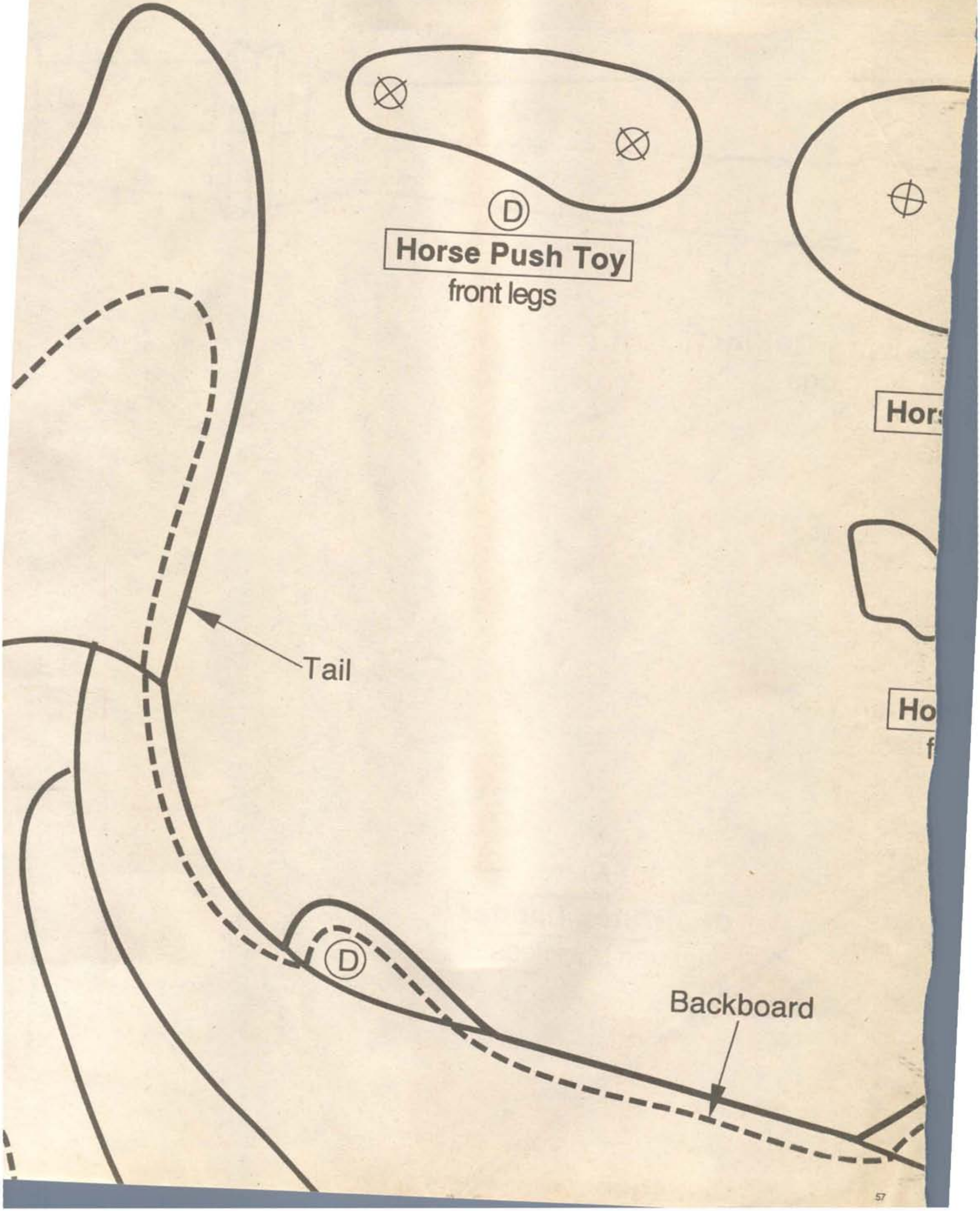
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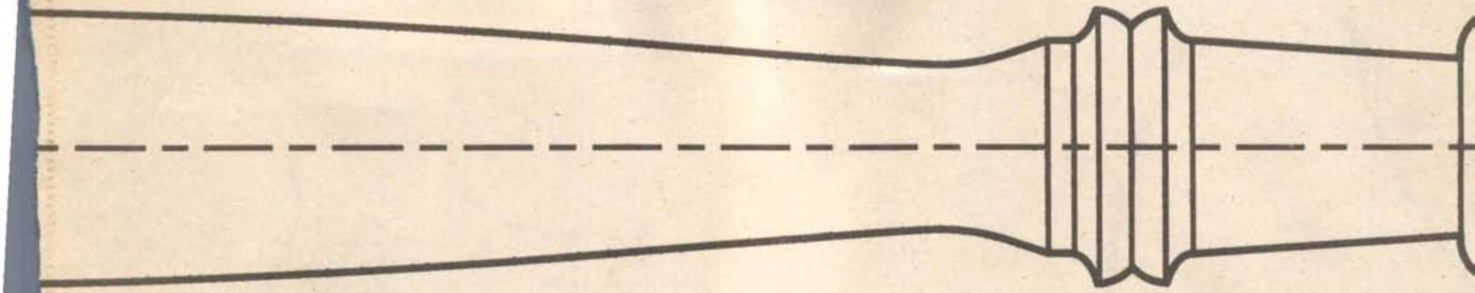

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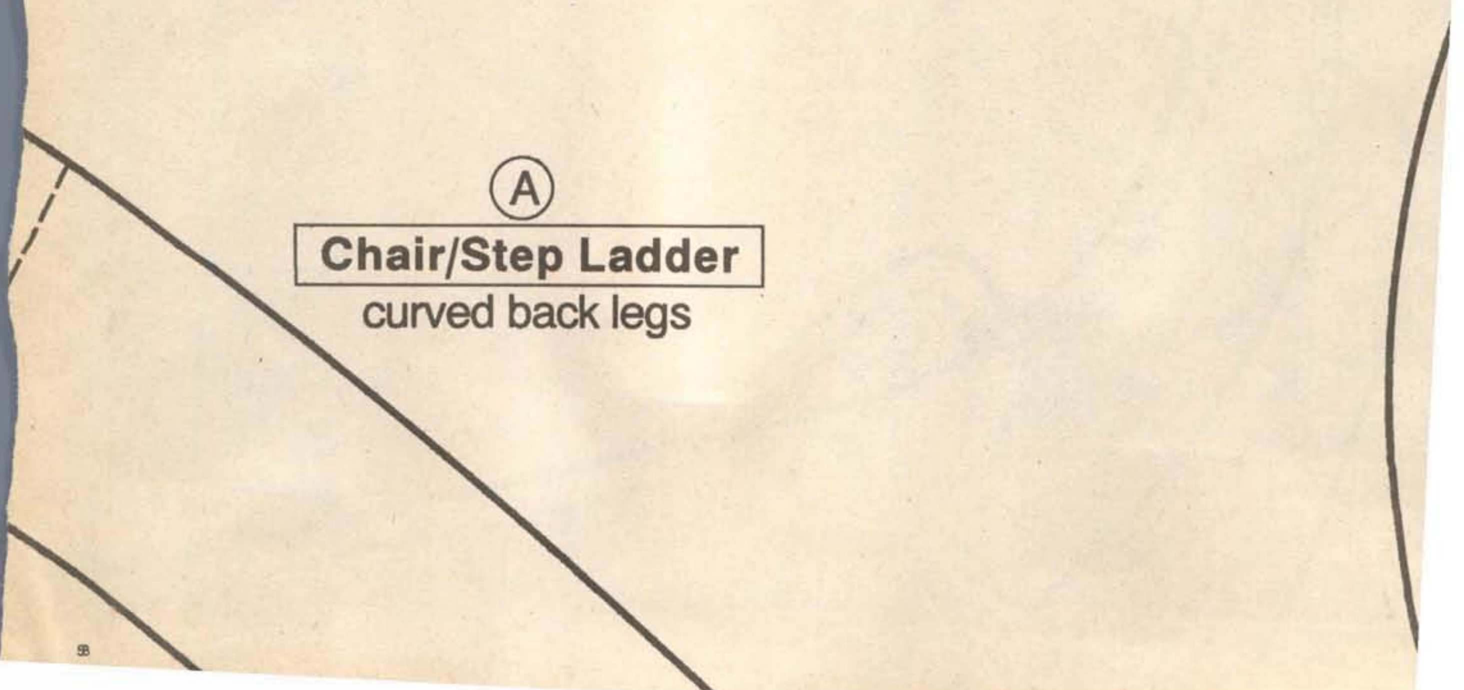
Sewing Cabinet

legs



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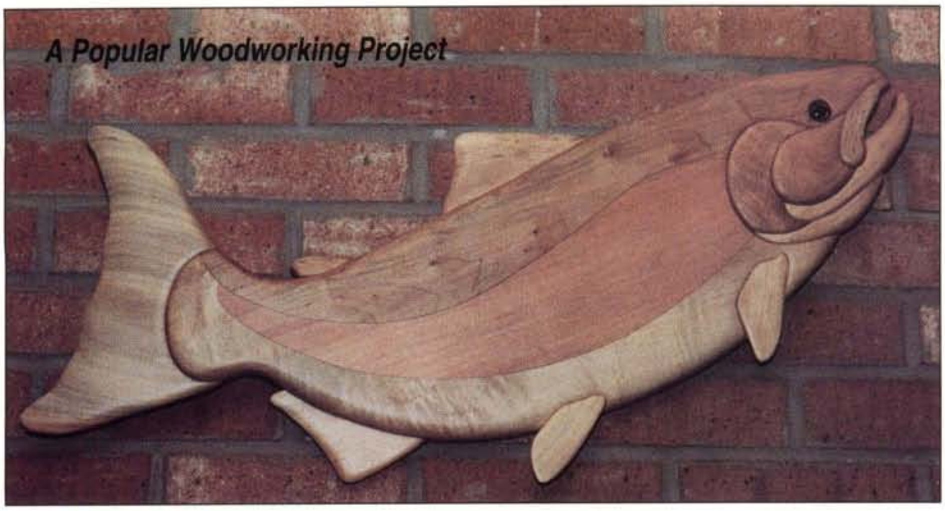
Chair/Step Ladder

curved back legs

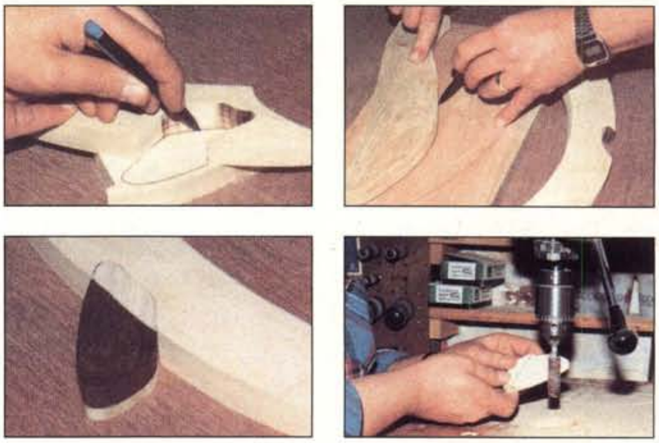


Salmon Wall Plaque

by Robert J. Hlavacek Sr.

You won't have to get up at four in the morning to catch this beauty. I used 3/4" soft maple, but you can use any combination of wood species as long as the colors go well together. Compared to the southwest skull project (see *Popular Woodworking* #67), which was cut pretty much from one piece of wood, the salmon will require more care in cutting and fitting because you'll be assembling a number of pieces in various shades.

Since you'll be looking for appropriate color and grain configuration, the best way to start is to copy the full–size patterns from the PullOut™ Plans to tracing paper. Position tracing paper over the wood, slip a sheet of carbon paper underneath and copy the pattern to each piece. You'll need a scroll saw or a band saw fitted with a 1/16" blade to make the tight radius cuts for fins A and B. Unless you have a steady hand and the eye of a microsurgeon when you cut out the pieces, you'll probably need a drill press with auxiliary table and sanding drums to trim each piece for a nice tight fit. This step will be repeated, as each piece is cut and fitted to the next.

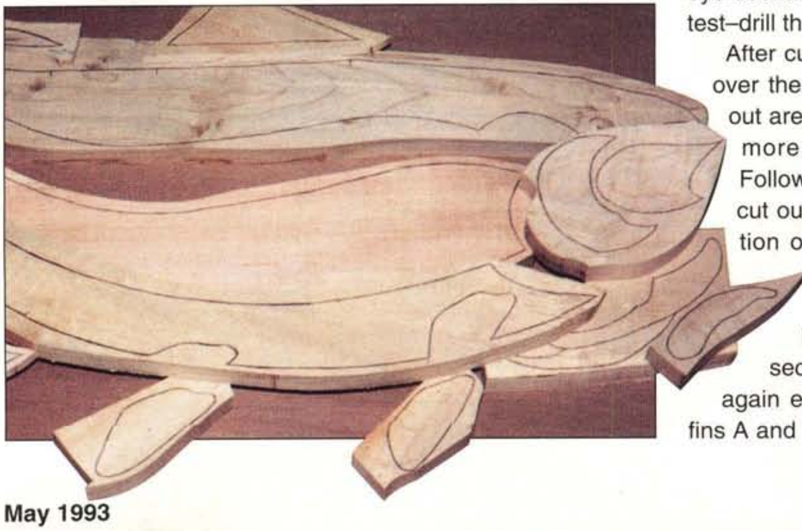


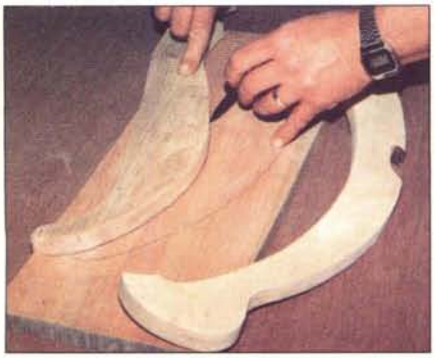
Once you've cut out a piece, retrace the adjoining pieces for a tight fit. The back of the fins (dark shaded portion) should be sanded and contoured smoothly. Trim and adjust with drum sanders on the drill press.

Note the 3/4" diameter recess to accommodate a 19mm glass eye which can be purchased from craft suppliers and taxidermists—try Van Dykes, Box 278, Woonsocket, SD 57385, tel. 800-843-3320 (orders only), item B3, gold trout eye, no wire, 19mm, $2.35 per pair plus postage and handling. Drill out the eye recess before cutting the piece to lessen your chance of breaking the thin lower section of the eye socket. Also, since glass eyes vary slightly in thickness, test–drill the hole in scrapwood to determine the exact depth.

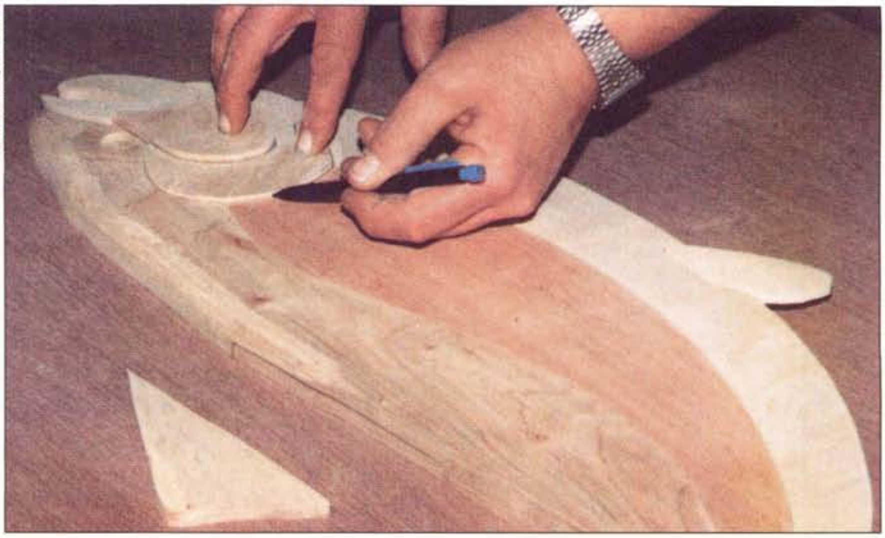
After cutting out the bottom section of the fish, position it over the material for fins A, B and C, and retrace the cut out areas where the fins join the body. This will provide a more accurate line to follow when cutting the fins. Follow this same procedure on fins D and E after you've cut out the top section. Do the same for the middle section of the body—-place the top and bottom sections over the stock for the middle and retrace using the cut edges as a guide for an accurate cutting line. Once the body is cut and fitted, tape the three sections together and position over the "gill cover" to again establish an accurate cutting line. When you have fins A and B fitted, mark the contour of body onto the back of

Robert J. Hlavacek Sr. *owns a woodworking business in Berwyn, Illinois.*

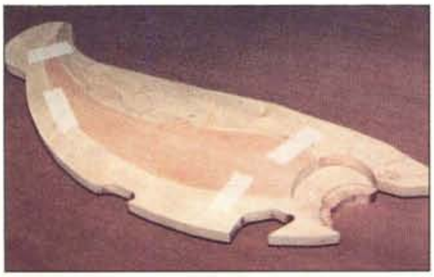


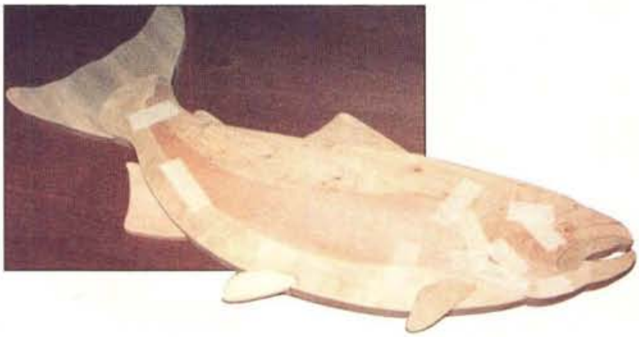


Bob and Kathy Hlavacek



For a snug fit, retrace the cutting lines on the middle piece using the already cut top and bottom sections. After cutting, tape the three together and position as shown in the photos below to establish accurate cutting lines for the "gill cover" and head and tail pieces.





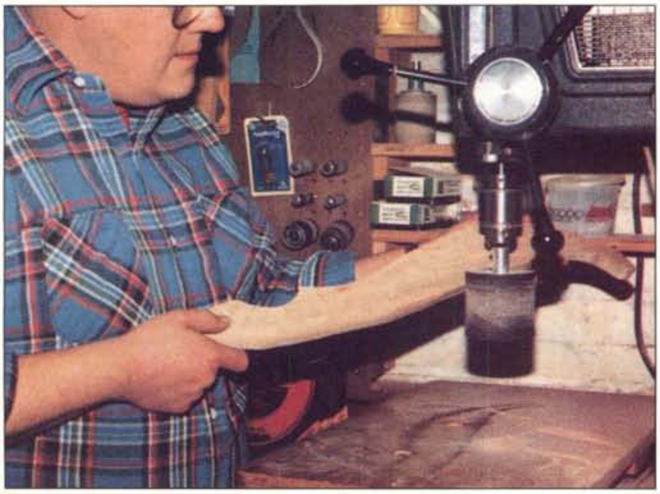
the fins. The back of the fins (except for the portion joining the body) should be sanded away and contoured with a ½" diameter sanding drum.

As you cut and fit each piece of the head, repeat the retracing procedure. Tape the pieces in position as they are trimmed until the head is complete. Fit the tail to the body.

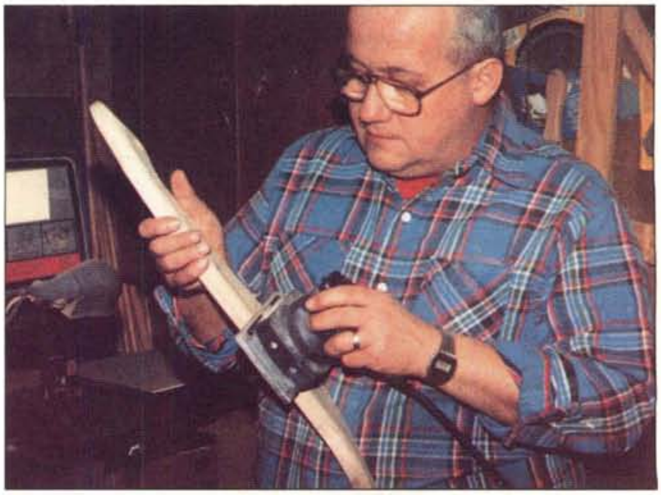
After gluing your ⅛" and ¼" plywood to the backs of pieces F, G and H, put them back into proper position and draw a line on the edges of the raised sections. Follow this line when you contour the edges so they all blend together. In the same way, mark the location of fins C, D and E, and the tail so when you start shaping you won't sand down too far and spoil the fit of the fins to the body.

Use your largest drum sander to round and contour the outer edges of the body. Refer to the cross–section Figure in shaping the bottom—taper the section torward the head as shown. You'll also want to remove enough stock so that fins A and B will be at least 1/16" higher to achieve depth. Use a pad sander and hand sanding to remove the ridges created by the sanding drum.

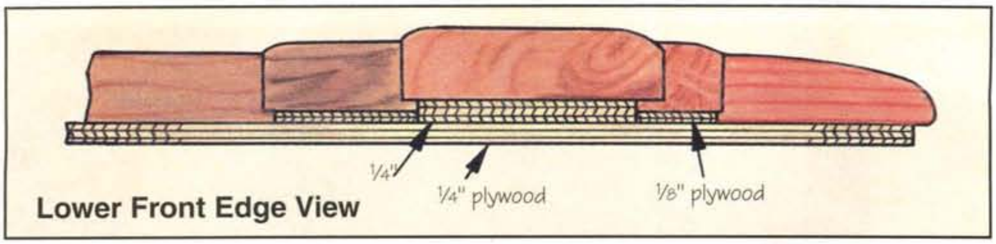
You're now ready to glue the body together. After three years of assembling the cut pieces to the plywood backboard individually, I devised the following procedure. Take a flat piece of ¾" plywood, place a sheet of waxed paper down and clamp the bottom section of the body to the board. Apply glue to the edges and position the middle and top sections. If

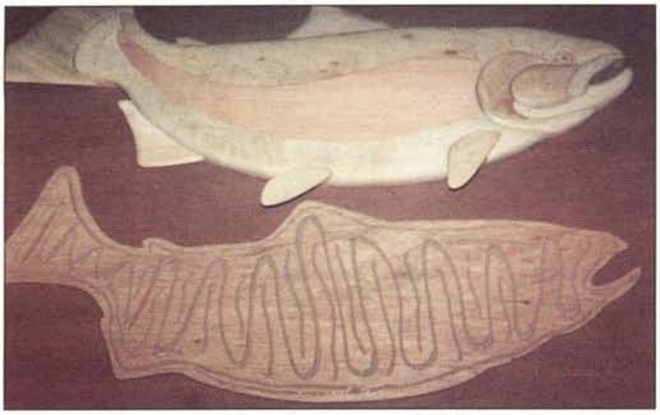


You'll need your largest drum sander to round and contour the outer edges of the body.

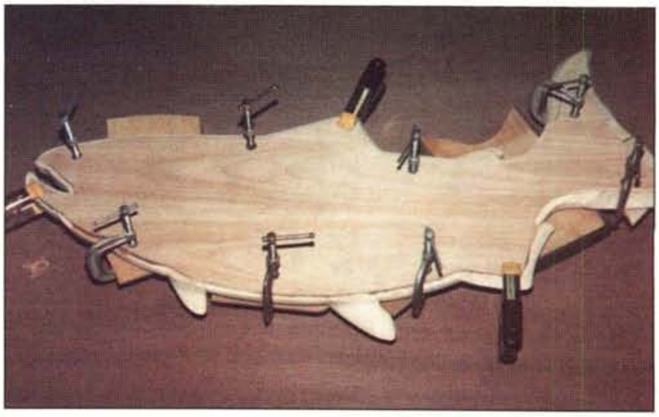


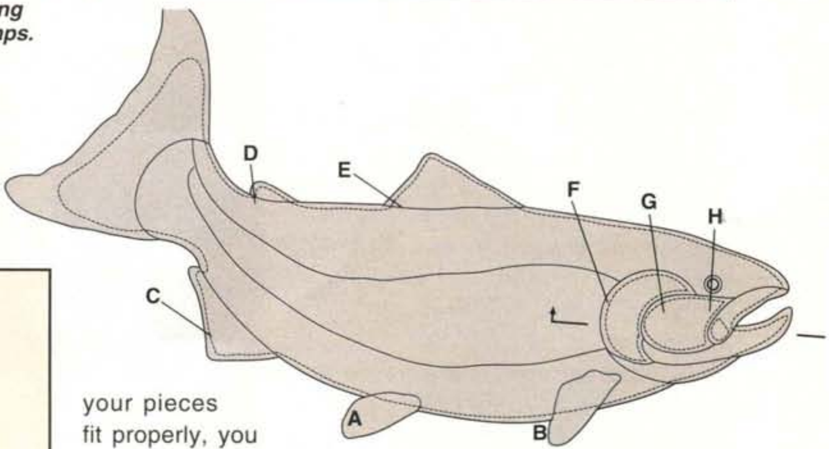
Drum sanding may leave ridges—remove them with a pad sander or plenty of hand sanding.





Apply a fairly thin bead of glue toward the edges when gluing the assembly to the ¼" plywood backer. Use plenty of clamps.





Materials

- ¾" soft maple or other wood of appropriate color for body and fins A and B
- ½" soft maple for tail
- ⅜" soft maple for fins C, E, and D
- ¼" X 27" X 9½" plywood underlayment for backboard and to raise piece G
- ⅛" plywood to raise pieces F and H
- 1 19mm glass eye
- 1 large sawtooth hanger

Clamp the bottom piece to a temporary plywood backer; then fit the center and top sections. Don't forget the wax paper!

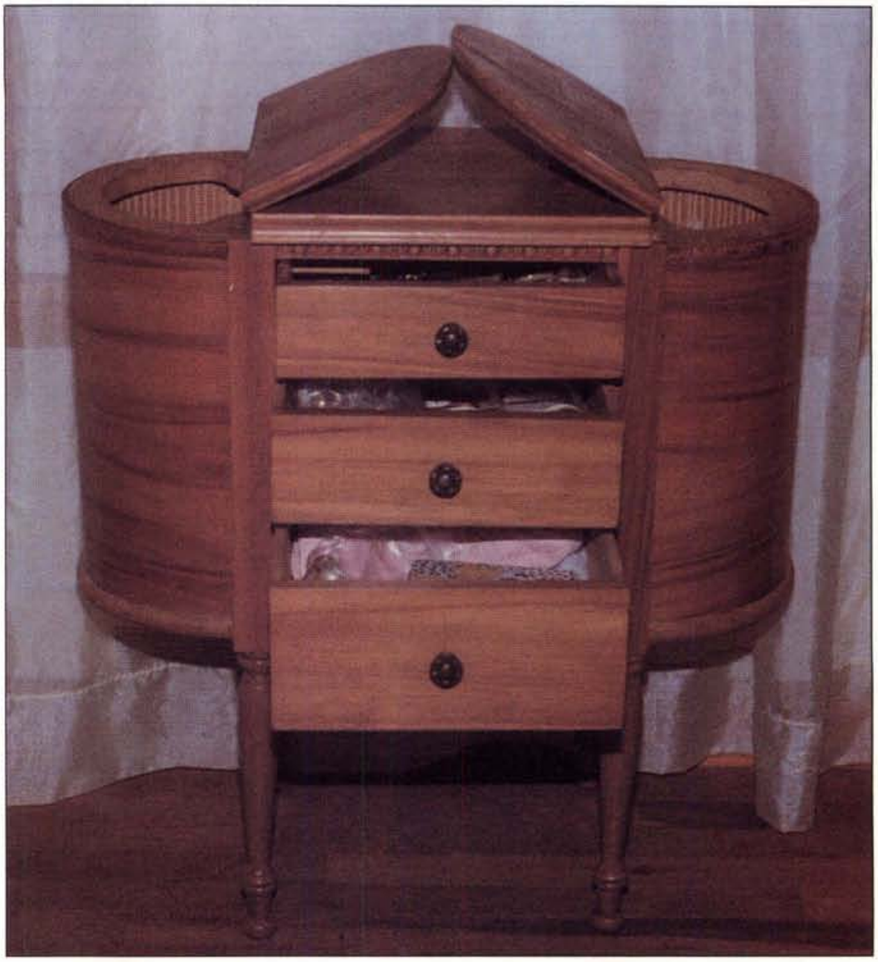
your pieces fit properly, you shouldn't need any clamps across the body. The best part of gluing the project together in this way is that you won't have the hassle of trying to get the individual pieces aligned when they're sliding around on the ¼" plywood backboard.

When the glue is dry, sand off any that may have squeezed out of the joints and give the whole body a final sanding with 180–grit paper.

Use your pad sander to shape and contour the raised pieces F, G and H, the edges of which you retraced earlier. Round the edges so they gradually flow into the next lower piece. Dry fit your salmon; check it from all angles to make sure all pieces have been shaped and sanded properly. Apply a thin bead of glue to the edges of each piece and assemble. Don't forget to put the waxed paper under the project or you'll be hanging the top of your bench as a plaque.

When the fish is dry, peel it off the waxed paper and apply glue to the ¼" plywood backboard. Use plenty of clamps. When the glue dries, spray two or three coats of clear finish to the back and attach the hanger. I sprayed five coats of Krylon Matte Finish No. 1311, sanded lightly with 400–grit wet and dry paper and applied the final coat. When dry, epoxy the eye in place. Note that the pupil of the eye is not round—the narrow part should point torward the nose of the fish. Now hang it—this is the one that didn't get away! PW

Frances Burch Sewing Cabinet



by Devore O. Burch

My final woodworking project in my senior year of high school was a sewing cabinet for my mother. She had clipped the picture from a magazine of that era and told me she wanted one just like it. So when I finished it, I gave it my Mother's name, The Frances Burch Sewing Cabinet.

I scaled up the picture, made the drawings and built the sewing cabinet from figured Red Gum. The project won a *ribbon in* a citywide exhibit. Along with the original, some of the pictures here feature a second cabinet I made from oak.

Making the Case

Make the four corner posts (A) to the dimensions given in the Cutting List. Bore a 1" diameter hole 1" deep in the lower end of each post to receive the leg tenons. Mark two of the posts as rear, and the other two as front and identify the left and right sides. Use the dimensions shown in Figure 1 to cut the rabbets for the case sides, dadoes for the back and curved panels, and the mortises for the drawer dividers. The tenons on the lower drawer divider extend into the leg mounting holes. After the case is assembled, clean out the holes with a 1" Forstner bit.

Cut the case sides (B), back (C), and drawer dividers (D) to the sizes shown in the Cutting List. Cut the tenons on the drawer dividers as shown onpage 64. Cut the notches in the bottom corners of the sides and notch the top cleats to fit the stopped dadoes in the posts as shown in the exploded perspective on page 65. Dry assemble the case and when everything goes together as it should, glue it up. Check for square. When the glue has set, make and install the drawer slides (E), guides (F), and top cleats (G). Cut the notch in the cleats and drawer slides to fit the back corner posts. I used #8 FH wood screws and glue to attach these parts to the sides. Elongate the mounting holes in the cleats for the screws that attach the top. These are slotted to allow for any expansion or contraction of the top.

From the template in the PullOut™ Plans, cut out and install the end formers (H and I). Make sure the formers are in a plane with the top and bottom of the case assembly. Attach the formers with glue and screws as shown.

***Devore Burch** works wood in Fort Worth, Texas.*

Curved End Panels

On the original sewing cabinet I used ¼" plywood scored on the back side with multiple saw cuts, this works okay, but I decided to try bending ⅛" oak plywood after a pre–soak with water. I didn't immerse the panels in water for fear of delaminating the plywood. I placed a wet towel on each side of the panel and let it soak overnight. This makes the ⅛" plywood flexible enough to bend. You need band clamps and a helper to help guide the panel into the second slot. Tie the panels to the formers with ¾" brads. The decorative oak trim (Y) applied later hides the nail heads.

Top

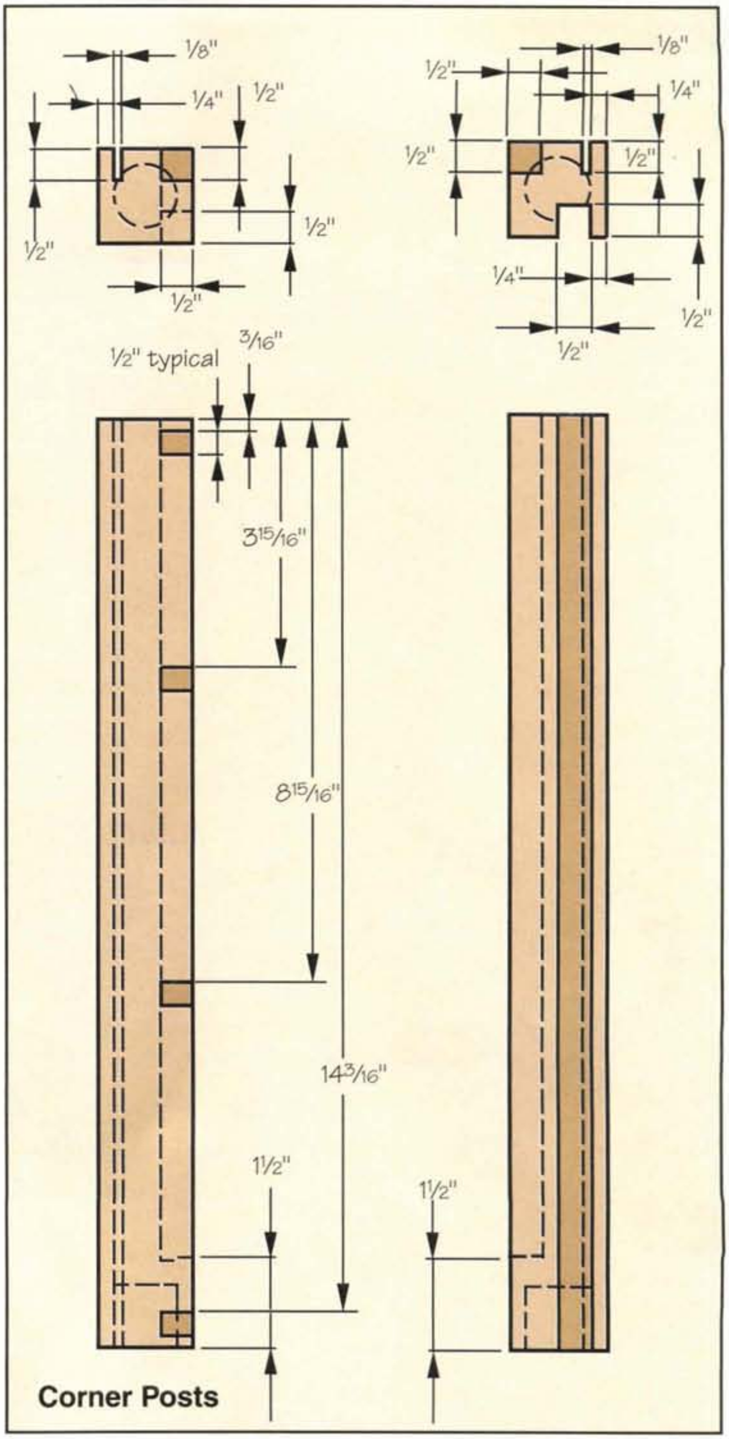
Cut out the top (K) to the dimensions given in the Cutting List and cut the arcs on the ends as dimensioned in the Figure below. The top is actually three pieces. I made it as one piece, shaped the decorative edge, then cut off the end flaps. I hinged the flaps to the center top section with Soss hidden hinges, model 110, from Garrett Wade, 161 Avenue of the Americas, New York, NY 10013-1299, tel. (800) 221-2942. Attach the top to the case with screws driven up through the top cleats (G).

Drawers

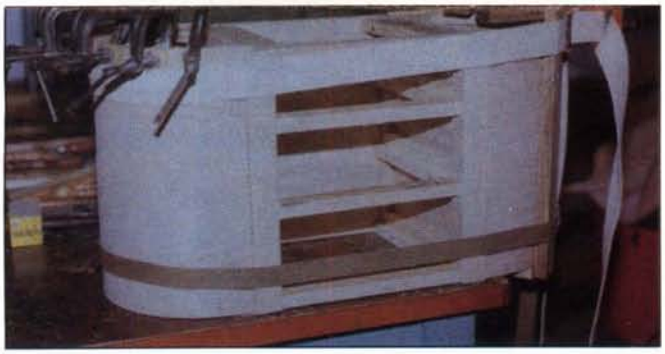
Next make the drawers in the manner you prefer, by the conventional rabbet joint method (see Cutting List L–W) or use half–blind dovetails, which is more appropriate for a piece of this era. See page 65 for a typical rabbetted drawer and *Popular Woodworking*, issue 67, page 74, for halfblind dovetails. Attach the drawer pulls and check the drawers for free movement.

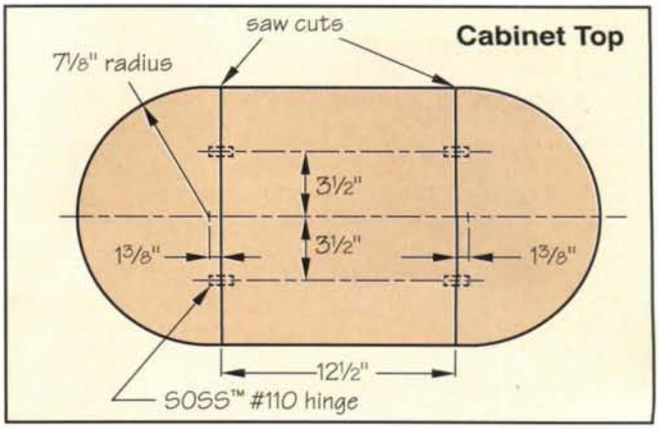
Moldings

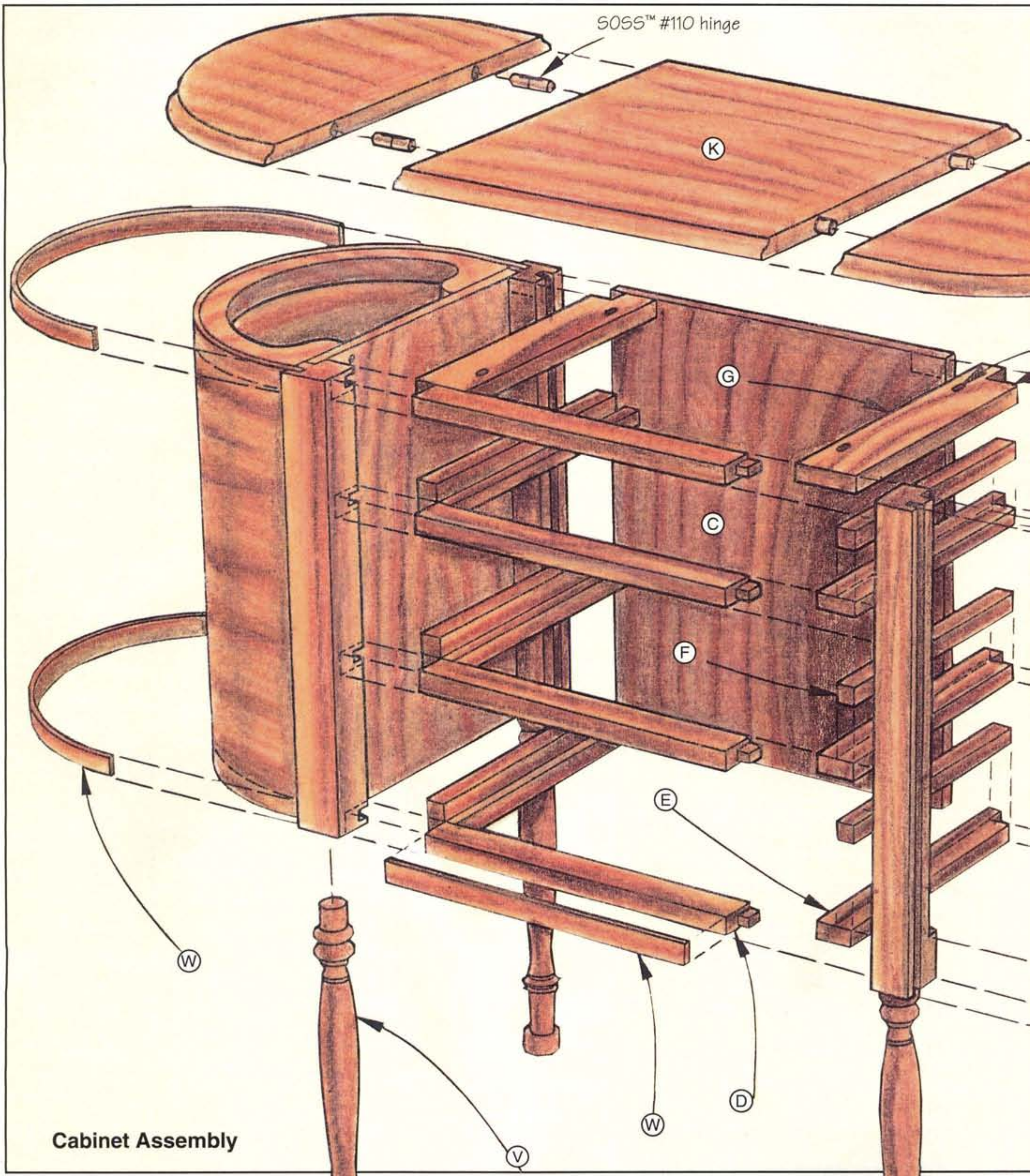
Apply the decorative wood moldings (W) with small brads and glue on the front of the drawer dividers and around the top and bottom of the curved end panels. The molding is optional, but it adds a nice touch. To bend the molding around the curved end panels you may need to use steam. A simple steaming fixture is shown in on page 65. Don't steam the molding very long, only about ten minutes is required to make it flexible enough—experiment on a trial piece of similar cross section. Steam and scalding

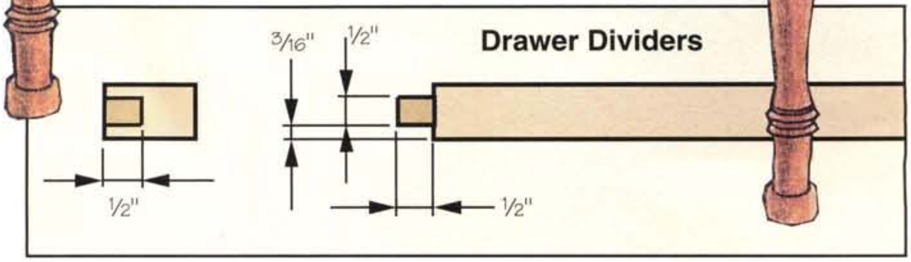


An extra set of hands helps when gluing the curved ends.

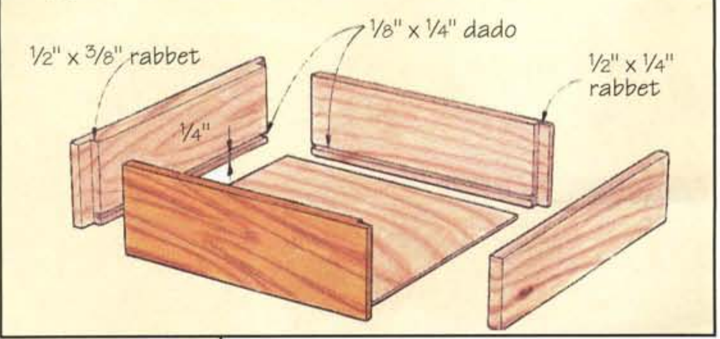




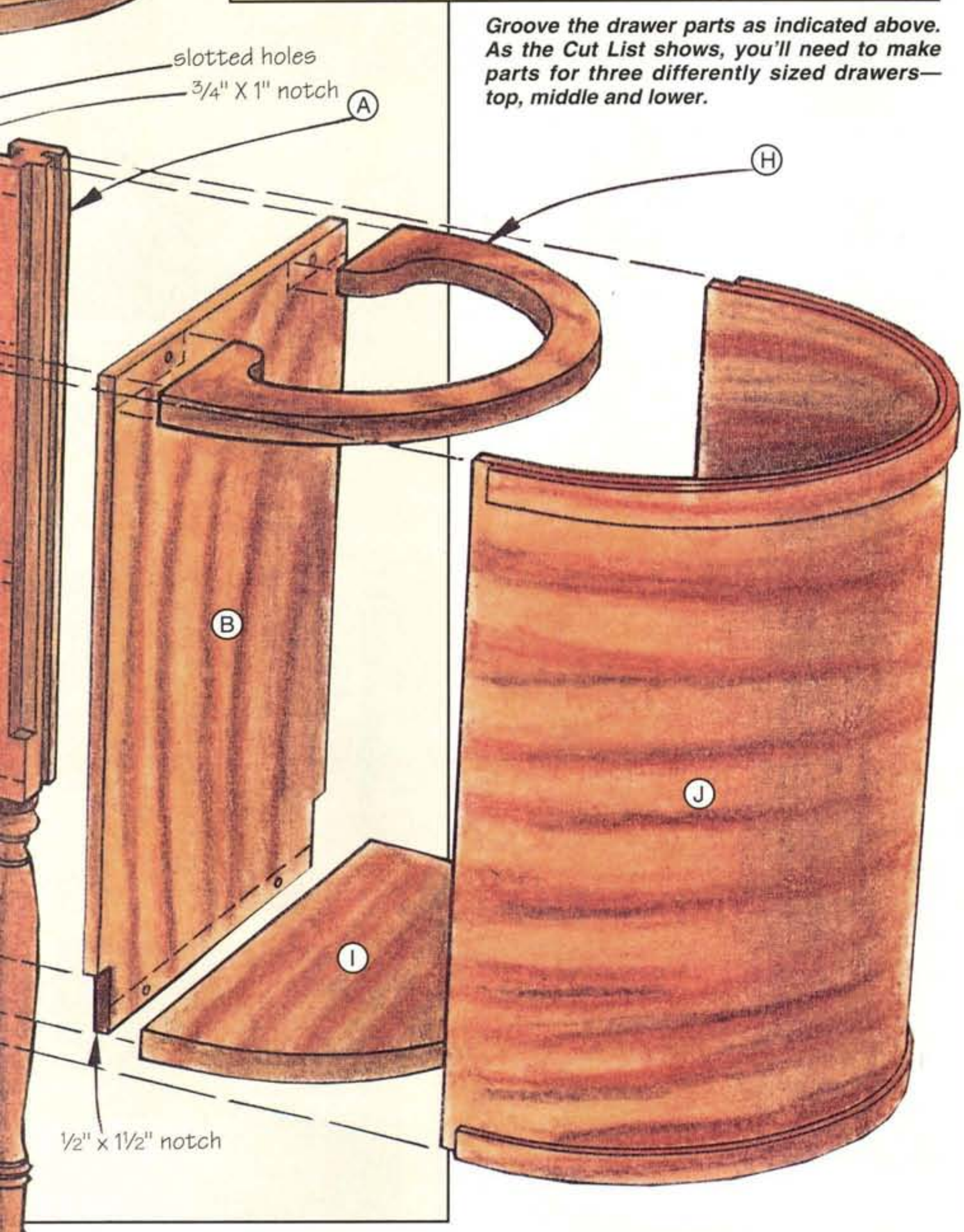

Cabinet Assembly


Drawer Dividers

Typical Drawer Assembly



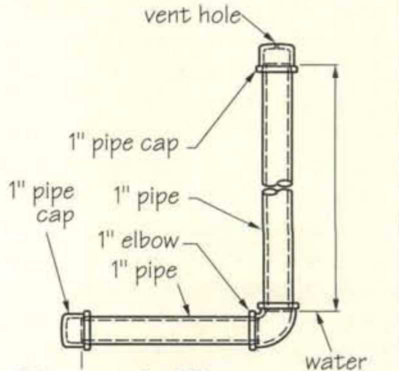
Groove the drawer parts as indicated above. As the Cut List shows, you'll need to make parts for three differently sized drawers—top, middle and lower.



Sewing Cabinet

Cutting List

Qty	Part	Finished Size T	W	L	Piece
4	A	1½"	1½"	14¾"	corner posts
2	B	½"	14¾"	10½"	sides
1	C	½"	14¾"	12"	back
4	D	¾"	1¼"	12"	drawer dividers
6	E	¾"	1½"	10¼"	drawer slides
6	F	¾"	¾"	9½"	drawer guides
2	G	¾"	2¼"	10¼"	top cleats
2	H	¾"	6½"	11¾"	top formers
2	I	¾"	6½"	11¾"	bottom formers
2	J	⅛"	14¾"	13⅝"	curved panels
1	K	¾"	14¼"	29⅜"	top
1	L	¾"	4½"	11"	low drawer face
2	M	½"	4½"	11¼"	low drawer sides
1	N	½"	4⅛"	10½"	low drawer back
1	O	¾"	4¼"	11"	mid drawer face
2	P	½"	4¼"	11¼"	mid drawer sides
1	Q	½"	3⅞"	10½"	mid drawer back
1	R	¾"	3"	11"	top drawer face
2	S	½"	3"	11¼"	top drawer sides
1	T	½"	2⅝"	10½"	top drawer back
3	U	⅛"	10½"	11⅛"	drawer bottoms
4	V	1⅝"	1⅝"	13"	legs
1	W	¼"	¾"	30'	decorative trim



Shopmade Steamer

water can cause serious injuries so exercise caution. Use face and eye protection and gloves.

Legs

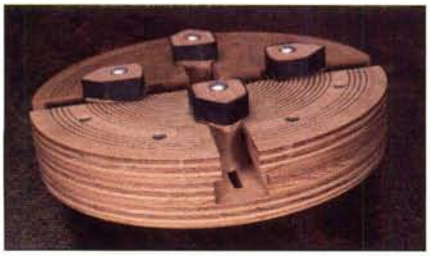
Turn the legs (V) to the cross section given in the PullOut™ Plans, or design your own. In either case, the turned dowel at the top must be 1" in diameter. Glue the legs in place.

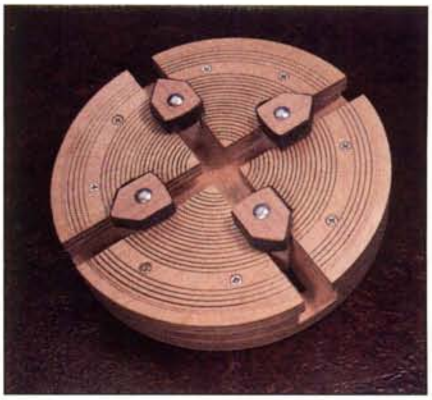
The cabinet is ready for finishing. Try a golden oak or medium brown stain on oak—dark stain will hide the grain.

Perhaps there aren't as many seamstresses around nowadays as there once were in the heyday of this oldtimer, but I'll bet you know a lady who can find a use for this classic sewing cabinet. PW

Four-Jaw Chuck

for the Lathe





by Don Kinnaman

One very useful accessory for the woodlathe that isn't often considered because of its price is the three or four–jawed chuck. While they are readily available, many hobbyists are reluctant to lay out the $150 or so for this accessory.

Here is a chuck you can make in your workshop that you can customize to fit your lathe. Some lathes have a 12" or greater swing, many others less. This chuck is designed to fit a Delta 12" lathe. If the distance from the headstock to the ways on your lathe is different, adjust the dimensions given here.

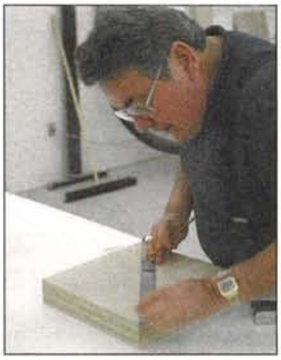
Make your chuck from a good grade of 3/4" plywood such as birch. Start with three 12" X 12" pieces for the main body. Find the center on each by drawing corner to corner diagonals. From the center, use a compass to lay out the circumference (6" radius) on each piece. Use a square to lay out the centerlines of the 5/16" wide slots on the base. Lay out parallel lines 5/32" on either side of the centerlines. Lay out centerlines on the middle layer and cut lines 3/4" on either side. Do the same for the top layer, except the cut lines are 1/2" from the centerline.

Set the fence on your table saw to cut the four square pieces for the middle layer. Reset the fence and perform the same procedure for the top layer. You now have nine squares—one 12" base, four 5 1/4" middle layers, and four 5 1/2" top layers. On the band or scroll saw, cut all the circumference lines and sand the curves to the line.

On the base, drill 5/16" holes 1" from the perimeter on each of the center lines. Drill another set of holes 2 3/4" down the centerline from the first hole. Slip the blade on the scroll saw through one of these holes and follow the predrawn line to the other hole and back to make the slot for the 1/4" X 3 1/2" carriage bolts. Repeat for the other three slots; then check that the bolts slide back and forth with ease.

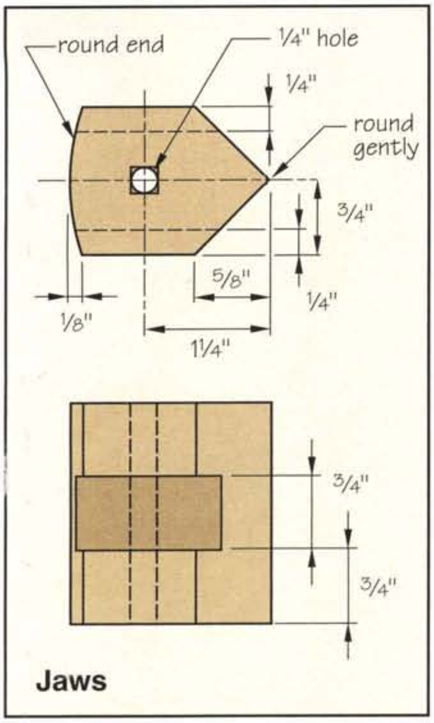
***Don Kinnaman** lives in Phoenix, Arizona and is a regular contributor to* Popular Woodworking.

Take the time to lay out all the lines before you begin cutting. This will help you visualize how all the pieces go together.



Always keep the workpiece tight against the fence and use a push stick in tight quarters.

Drill holes at both ends of the bolt channels before removing the waste.



Jaws

Precise placement of the dadoes will ensure smooth, easy movement of the jaws.

Check the angle between the bit and the drill table before you start drilling. A misaligned hole will prevent the carriage bolt from fitting in the slot in the base.

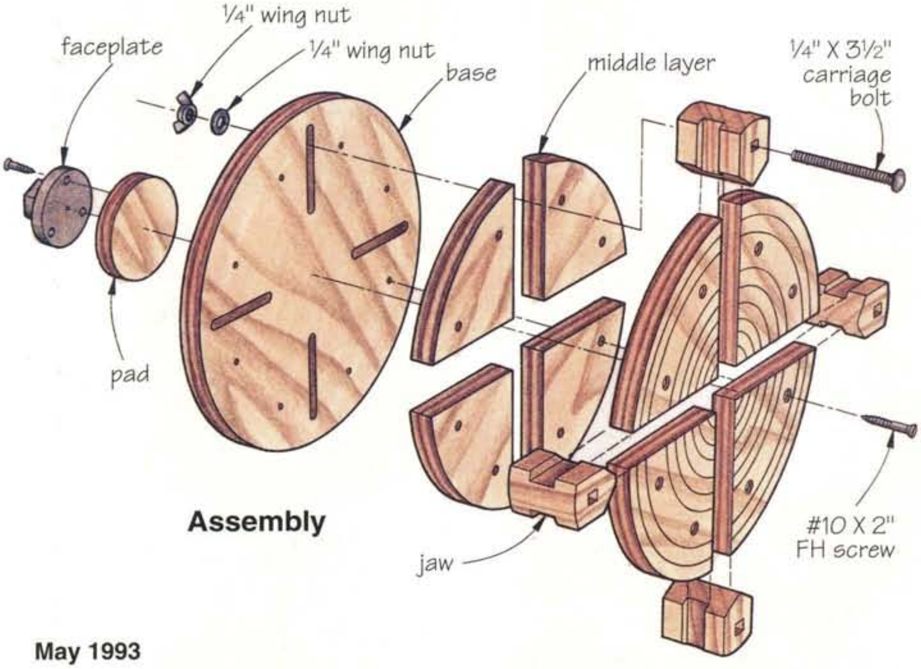
The jaws will hold more securely if you undercut the gripping edge by a couple degrees.

Check the freedom of each jaw with all the components in place before attaching pieces to the base.

You may want to use a little CA glue to secure the pieces for drilling.

Hardwood Jaws

Make the jaws from a hardwood such as maple, birch or oak. Cut all four jaws from one piece 2¼" X 1½" X 9". Set up a ¾" dado in the table saw and set the fence ¾" from the blade. Raise the blade to a height of ¼" and cut the dado down the middle of the 2¼" side. Flip the piece over and repeat the process. Lay out and mark the 1½" top with 45° lines as shown in the Figure above to indicate the cuts you'll need to make to separate the four jaws. Clean up the pieces on the sander. Locate and drill a ¼" hole where indicated for the carriage bolts.



Assembly

Put It Together

Install the four jaws loosely in the base and fit the four middle layer pieces into position. Make sure the jaws slide back and forth easily. Use a couple of small brads to secure them in place. Place the top layers in place, check that the jaws move freely and clamp them in place. Drill and counterbore for two #10 X 2" FH wood screws in each quadrant—set the screws.

Make a circular pad to fit your faceplate; glue it to the back of the base. Locate the center of the pad and mount the faceplate. With the jaws removed, attach the chuck to the lathe. Set the lathe to a slow speed and true the chuck using a gouge—sand. Set the tool rest on the face and lightly cut reference circles with a diamond chisel.

Now Use It!

To help the jaws hold the work, cut four ½" bands of 10–speed innertube and stretch them over each jaw. For safety, put a small block between the piece and tailstock and run the tailstock in tight to help secure the work. PW

Building Wooden Bar Clamps

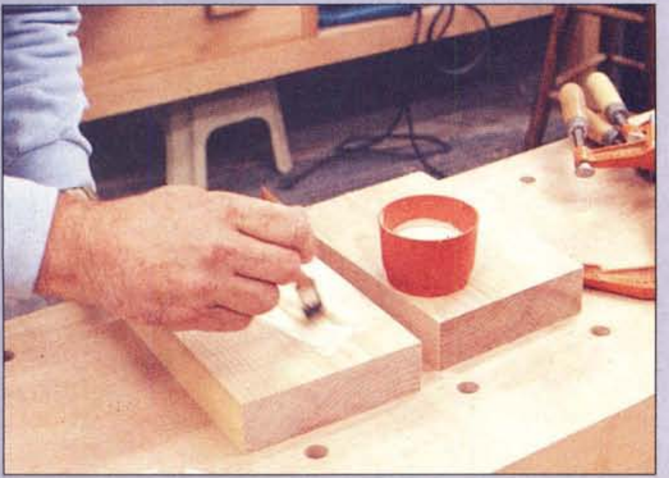
by Hugh Foster

Remember the old adage about never having too many clamps? Well, do you have too many? If you're like me, there ain't no such thing! You can easily make a dozen of these clamps in a weekend. You'll need about two hours to make a clamp once the glue–ups for the head and tail stock pieces have dried. It takes just a bit longer to make the parts for a dozen, so production lining is a practical idea. I used a piece of 2" X 5½" maple milled to a thickness of 1⅝", but you can laminate rippings to get the material you need. Each clamp takes about 1½ board feet of wood, and there's very little waste.

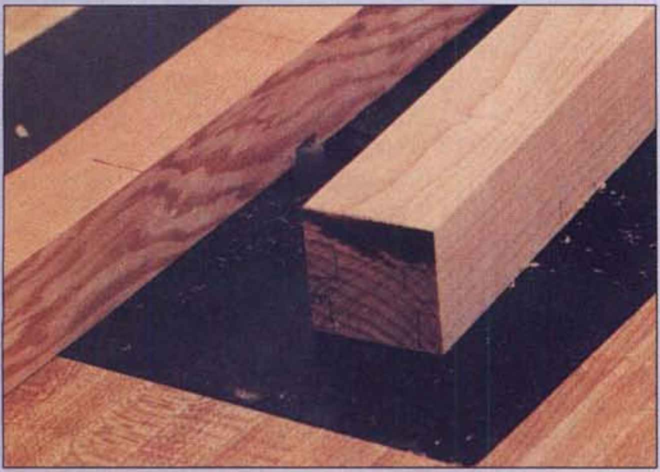
***Hugh Foster** is an English–teaching woodworker in Manitowac, Wisconsin, and the author of* The Biscuit Joiner Handbook *(Sterling Publishing, 387 Park Ave. South, New York, NY 10016).*

There are no metal parts used in this clamp. In tests, I've applied enough torque to hurt my hands. Handle shape is critical—if you don't like the shape or size shown here, adjust it to suit your own needs. Under duress, the clamp makes creaking, boat–like sounds, but isn't failing. If you drop one of these clamps on your bench or your foot, the damage will be much less than an old steel bar clamp.

The thread fit is loose, but not sloppy. Humidity does affect the wood, and the shop–made threads. Wax the clamps periodically to keep stray adhesive from gluing them permanently in position. Most of the parts can be replaced if some damage occurs.



Glue up head and tail stock blanks on a Friday evening, and you'll be ready to work bright and early the next morning.



Clearly mark where you want to remove stock and use stop blocks or reference lines to accurately begin and end cuts.

Construction

Glue up and clamp the head and tail stock blank first. Use two pieces of 1⅝" thick stock measuring 3¾" X 8¼". Cut the bar (A) first, since all the other pieces will fit to it. For a bar with 26" between the jaws, use the dimensions given in the Cutting List. If you want to clamp longer pieces, increase the length of the bar. Study Figure 1 for the rabbet and groove layouts. If you cut these incorrectly, adjust the dimensions of the other pieces accordingly. Use a table–mounted router and ½" straight bit for the best results, although you can use a dado blade with your table saw.

Cut the ½" X ¼" deep rabbets first. I used start and stop markings on the fence to indicate how far to go, or where to begin on *blind* cuts. Make two ¼" deep passes to minimize wear on your router and to reduce the chance of the piece getting away from you. Next, reset the fence and cut the ½" X ½" slots. You'll need another set of marks on the fence to start and stop the cuts. Square up the stopped ends with a chisel.

When the glued up blank has dried, cut the head (B) and tailstock (C) to the

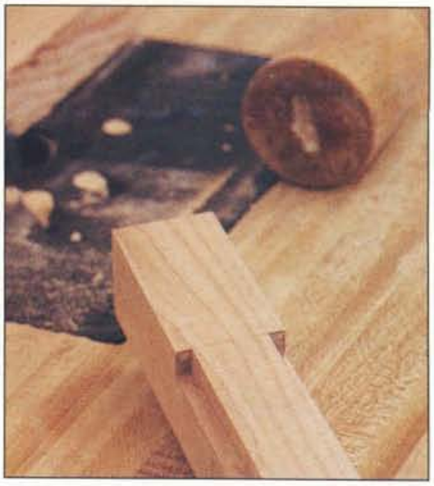
dimensions given in the Cutting List and set them aside. Cut the clamp head (D) to size and mark the location of the slot and hole as shown in Figure 2. Cut the slot with a 1/4" mortising bit or drill several 1/4" X 1¾" deep holes and chisel out the waste. Use a 1" Forstner bit to drill the 1½" deep hole for the threaded dowel end.

Set up the dado cutter in your table saw and secure an extension to the sliding miter. Use Figures 2 and 3 to lay out the lines that define the channels on the head (B), tail stock (C) and clamp head (E). Clamp a stop block to the extension and set it to the outside mark of the channel in the clamp head (D). Make all the following cuts with several shallow passes. First, cut the channel in the clamp head—rotating the piece 180° after each pass. With the stop block in the same place, lower the blade back down to 1/4" and cut the tall channel in the tail stock. Next, lower the blade again and move the stop block 1/4" further away from the blade. Make the shoulder cuts in the tail stock and at the same time, cut the channel in the head piece. Change pieces each time you raise the blade, and watch your marks so you don't over cut.

Cutting the threads

First, a bit of theory. Good wood threads don't come to a point like metal threads. Leave as much land at the top as

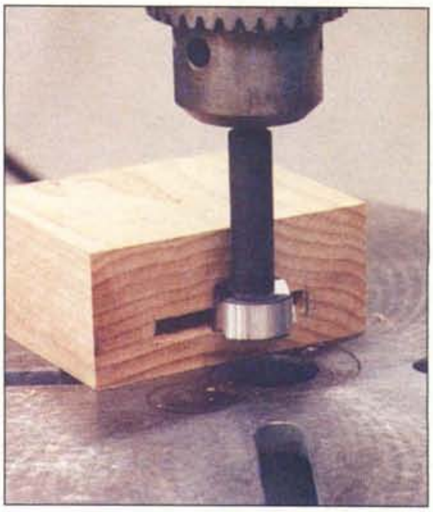
Clean up the stopped ends of the router cuts with a chisel.

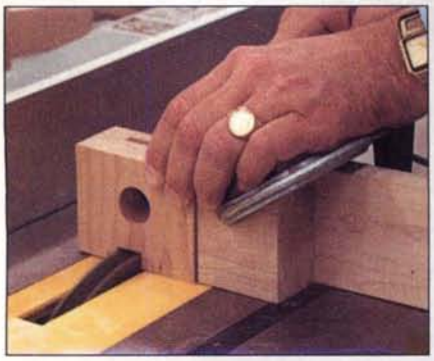


A mortising bit is helpful, but a Forstner bit does a fine job. Either way, clean up the slot with a sharp chisel.

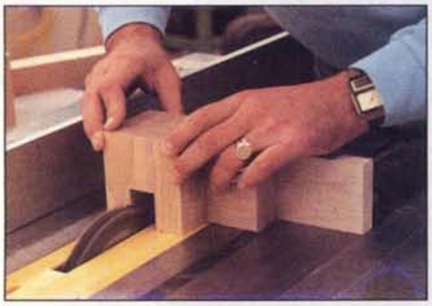
A featherboard and hold down are helpful for this procedure. We've omitted them for photo clarity.

Set the depth carefully—you don't want to punch a hole through the back side.





Symmetry is maintained with the use of a properly set up stop block on the miter.

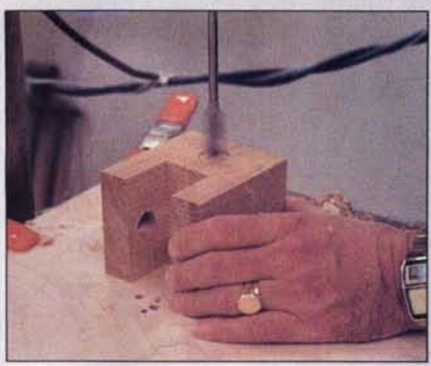


Make all measurements from the stop block to the farthest blade edge.

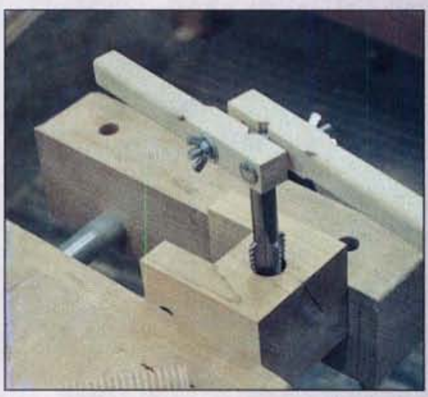
you possibly can—more pointed crowns are likely to break off. Some old hands at threading have suggested that threads continue to work more or less perfectly with as much as 40% of the thread area missing.

Making the blanks for threading is more difficult than the actual threading. Before you begin, determine how you'll cut the threads—this affects material selection. If you're going to use a traditional hand thread box, you'll use green wood. Make extra pieces to allow for warpage, checking, and other problems related to working with green wood. If you're going to use the Beall jig as I did, you can use kiln–dried dowel stock because the jig cuts the threads with a router bit.

Setting up the jig requires a bit of time, but you can cut a dozen threaded pieces in just a little more time than it

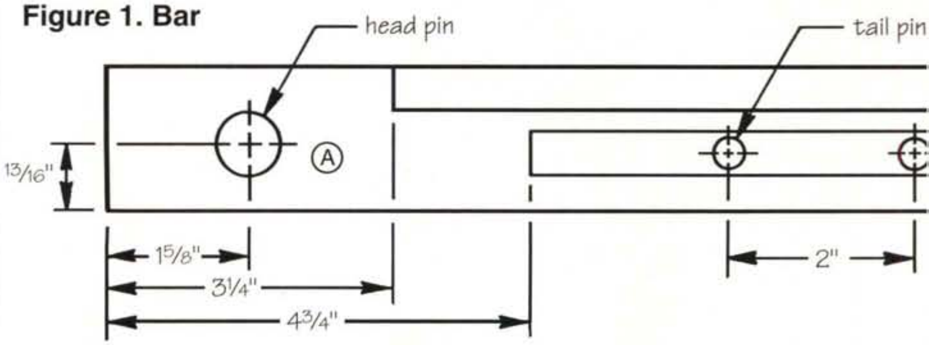


Place the head and clamp head on the bar; then double check your measurements before you bore the pilot hole for the tap.

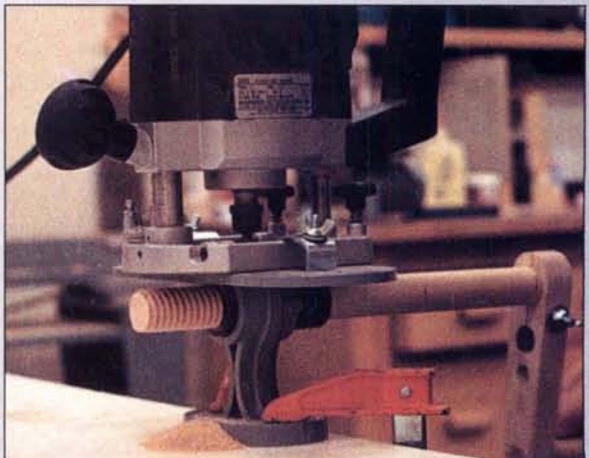


Run the tap through from both ends to assure a clean thread cut.

Figure 1. Bar



Aligning the router bit to the stock is the the most critical step in producing good threads.



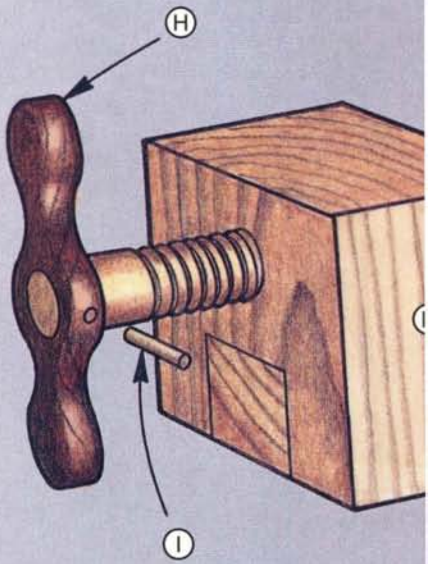
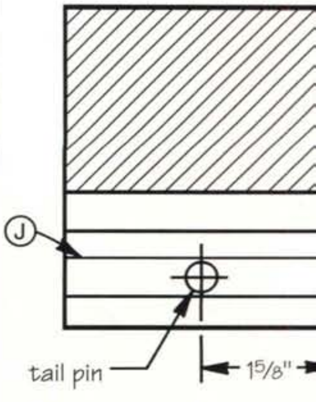
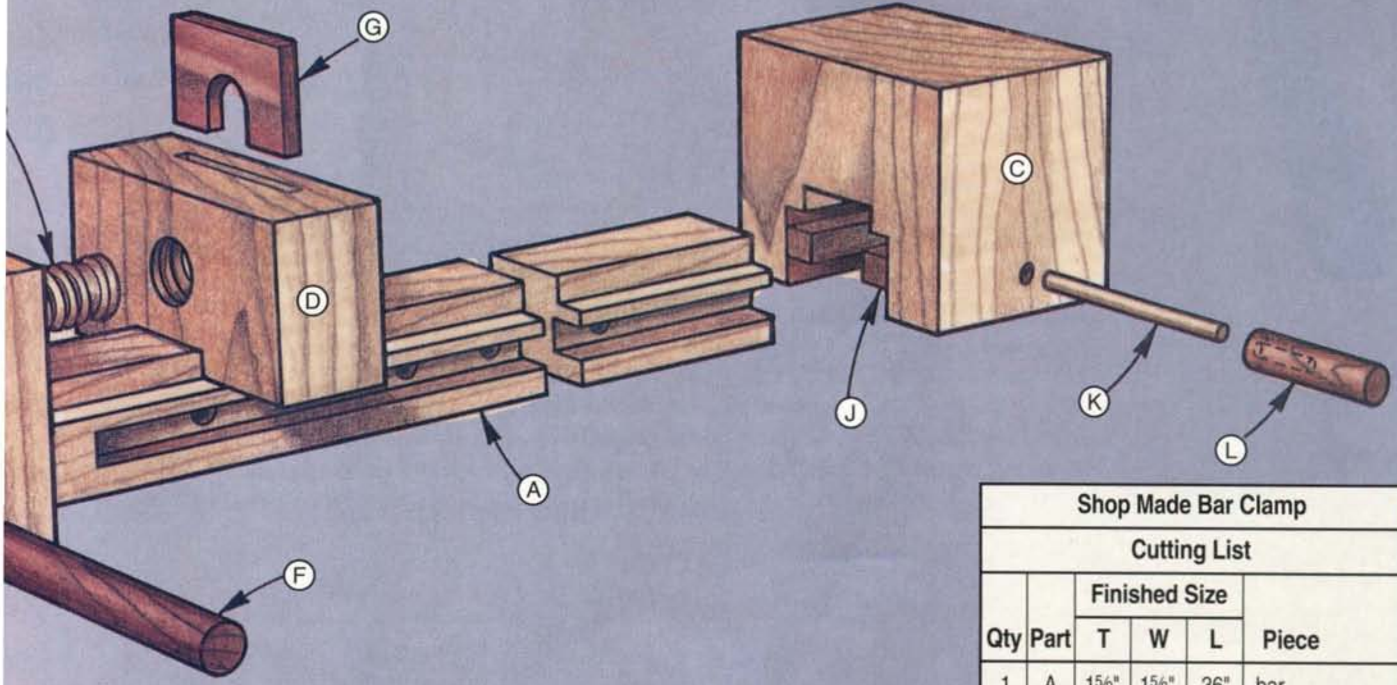
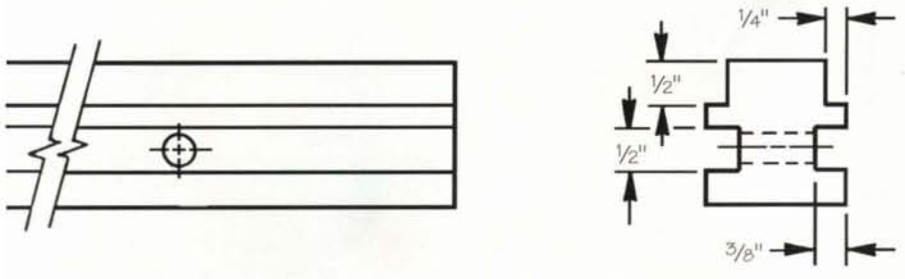


Figure 2. Tail Stock





Shop Made Bar Clamp					
Cutting List					
		Finished Size			
Qty	**Part**	**T**	**W**	**L**	**Piece**
1	A	1⅝"	1⅝"	36"	bar
1	B	3¼"	3⅝"	4"	head
1	C	3¼"	3⅝"	4"	tailstock
1	D	1⅝"	3⅝"	2⅞"	clamp head
1	E	1"	diam	12"	screw
1	F	¾"	diam	3⅝"	head pin
1	G	¼"	1¾"	2"	girdle
1	H	¾"	1½"	5½"	handle
1	I	⅜"	diam	1½"	handle pin
2	J	⅜"	½"	3¼"	inserts
1	K	⅜"	diam	4"	tailpin
1	L	¾"	diam	2"	tailpin head



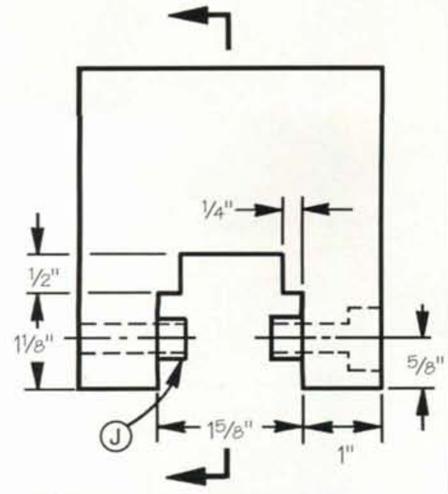
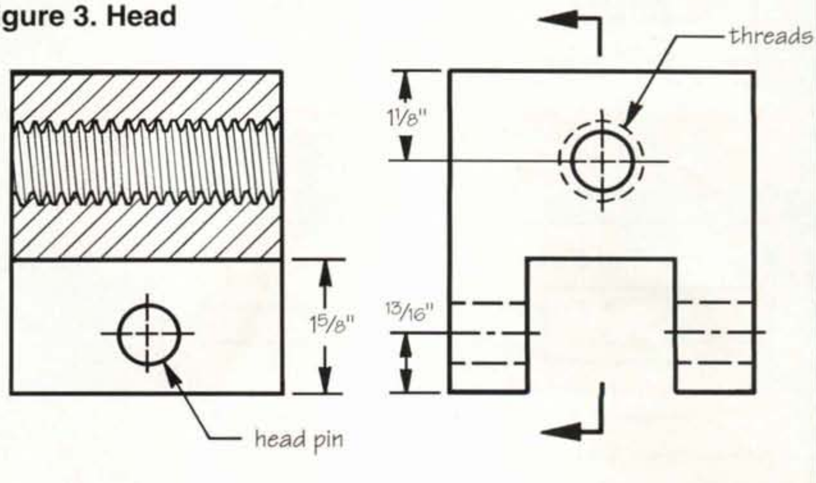
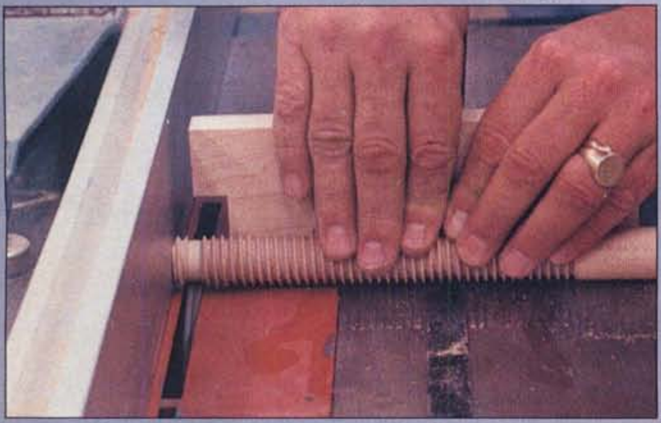


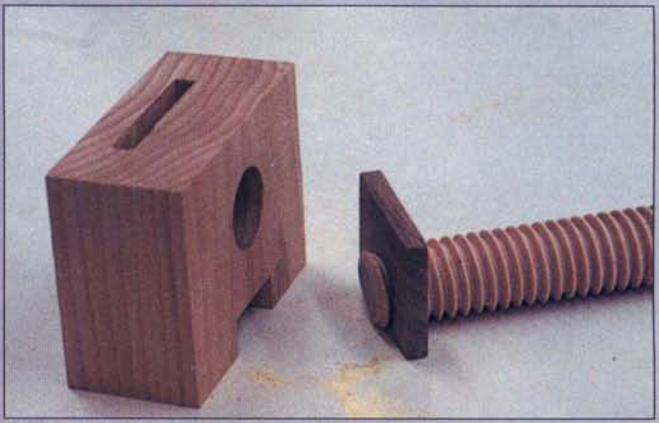
Figure 3. Head





Hold the screw firmly against the miter as you rotate it over the blade

takes to make one. This project is designed with production-lining in mind. I used 1" birch dowel. Thread 7½" of the dowel (E); then remove 3" from the unthreaded end. The extra length is for clearance between the crank and the hand



With the girdle in place over the cut out in the threads, rotate the screw to check for freedom of movement.

grip on my router. With the router on, turn the blank evenly and slowly through the jig in both directions. The Beall jig is so much fun to use that after you add one to your woodworking arsenal, you're sure to find lots of uses for it.

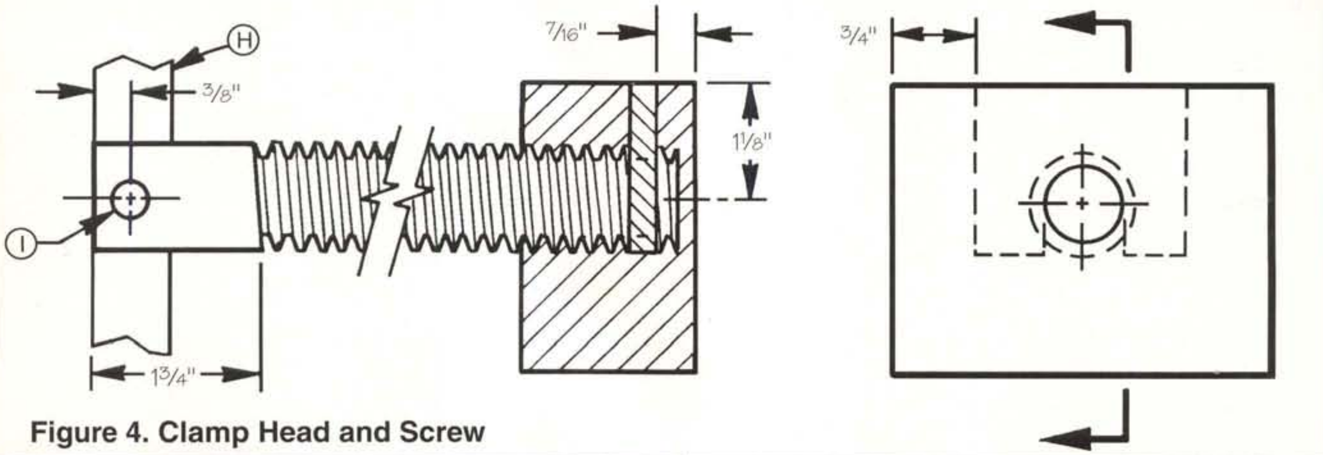


Figure 4. Clamp Head and Screw

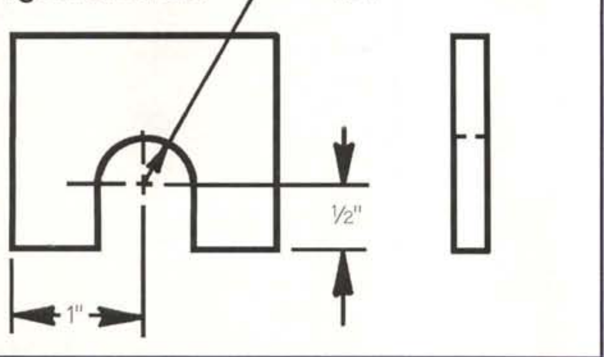


Figure 5. Girdle

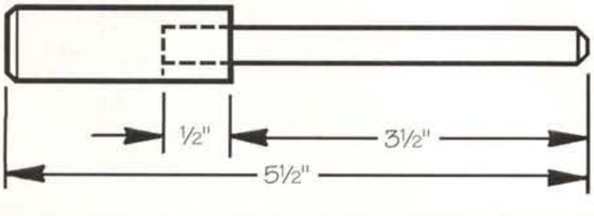
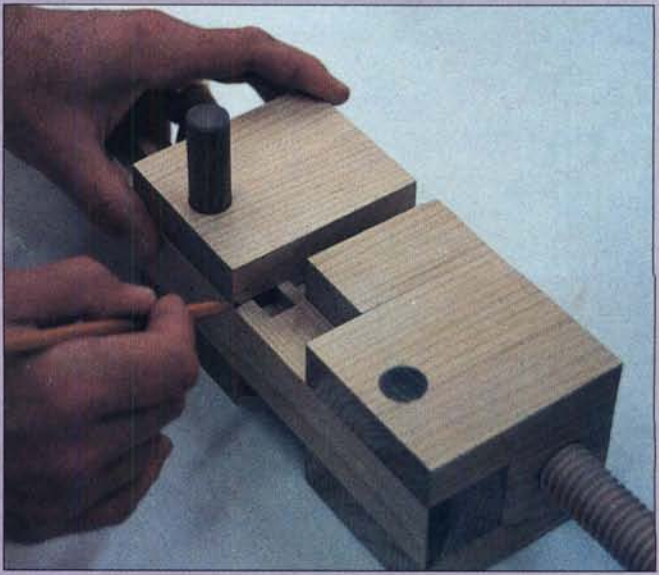
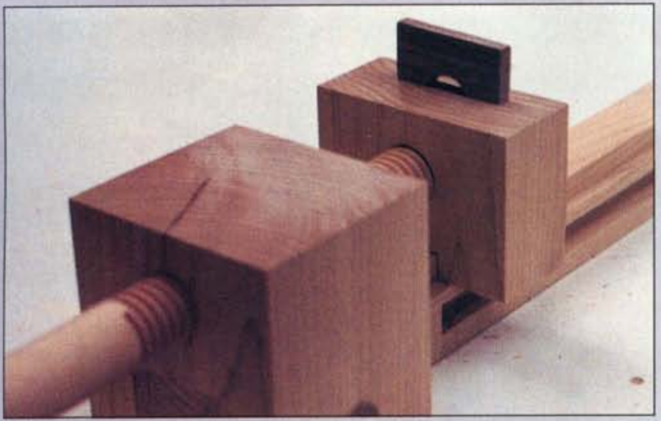


Figure 6. Tail Stock Pin

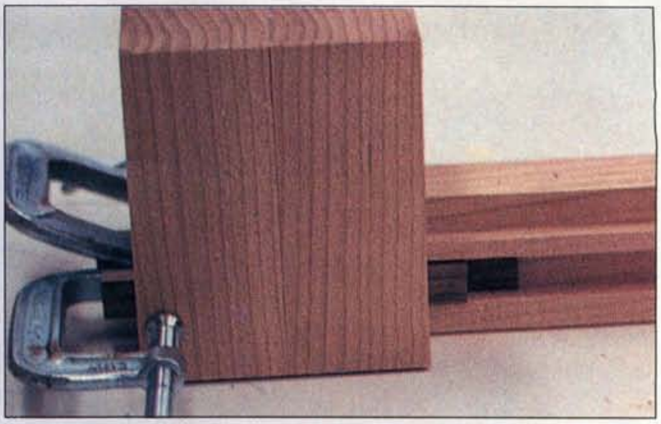
Locate and clamp the head piece (B) to the bar (A) and drill a ¾" hole for the head pin (F). Next, locate and drill the tap hole in the head piece. For a 1" thread use a ⅞" bit. I

Don't position the tail stock too close to the clamp head.





Thread the screw into the head stock before you secure the girdle in place.



Cut the tail stock inserts a little long. After the glue is dry, trim them flush with the tail stock.

used a spade bit because the shank on my Forstner bit isn't long enough to go all the way through the piece. Clamp the head in your vise and cut the threads with the 1" tap provided with the Beall jig. Check the screw for fit. If the fit is too tight, run the tap through again; then flip the block over and run the tap through from the other side. Glue and pin the head to the bar. Sand the pin flush with the sides of the head. Apply your finish to the bar and head—take care not to get any in the threaded hole. I used two coats of Deft semi–gloss.

Insert the threaded end of the screw (E) into the 1" hole in the clamp head (D) so it bottoms out in the hole. Insert a pencil into the ¼" slot and mark the threads you can see in the slot. Set your table saw blade to a height of ⅛" and remove the threads in the area marked as shown in Figure 3. I did this by rotating the dowel on top of the blade and up against the miter. Cut the girdle (G) to the dimensions given in the Cutting List; then use Figure 3 to locate and remove the cutout. It's not a good idea to test fit this piece—you may not be able to remove it once it is seated all the way in the slot. Finish all but the top of the clamp head.

Cut out the blank for the handle (H) and transfer the shape from the PullOut™ Plans. Drill the 1" hole in the handle for the unthreaded end of the screw; then round over the edges. Insert the screw, and drill a ⅜" hole for the handle pin (I). Glue the pieces together. Apply finish to all but the threads. When the piece is dry, rub a little paraffin on the threads. Wax will work, but paraffin is more slippery.

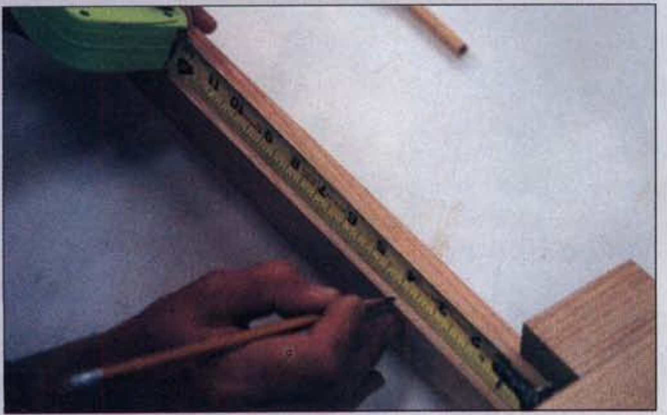
Turn the screw into the head until a couple of inches protrudes on the bar side. Place the clamp head on the bar and slide it all the way onto the screw. Look through the slot and make sure you can't see any threads; then insert the girdle with a couple of light taps with a mallet. Sand the girdle flush with the top of the clamp head and apply your finish.

Place the tail stock (C) on the end of the bar and test fit the two inserts (J) in the bar grooves. There should be a minimum amount of clearance all around. Cut two little wedges from scrap as shown. Apply a little glue to the insert on the face that contacts the tail sock—I used the thick cyanoacrylate made by Satellite City (800 522-0062)—and slide it into place. Slip the little wedges between the bar and the and the insert, and let the glue dry for ten minutes. Repeat the process for the other insert. When the glue is dry, slide the tailstock up and down the bar to check for freedom of movement.

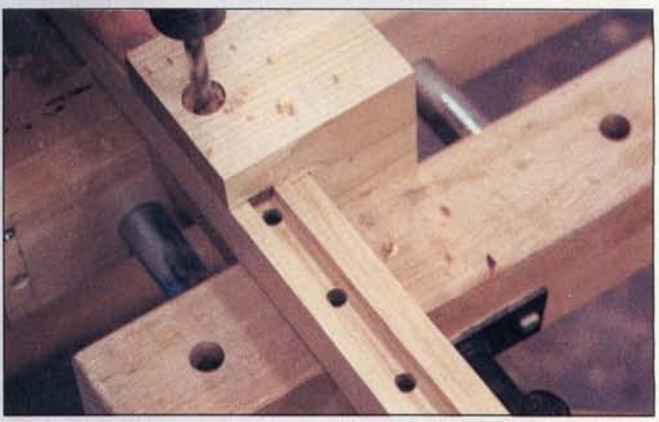
With ½" of thread showing between the head and the clamp head, slide the tail stock up to the clamp head. Drill a ¾" X ½" deep hole in the tail stock where indicated in Figure 2. With a ⅜" bit, drill the rest of the way through the bar and tail stock. Mark the location of one edge of the tail stock on the bar; then remove the tail stock. With the first mark as a reference, place a mark every 2" down the bar. Slide the tail stock back in place and drill the remaining holes at each of the marks. Finish the tail stock. Make and finish the tail pin (K and L) as shown in Figure 6.

Now comes the hard part—do you use the clamp as intended, or clear off the mantle and proudly display it? PW

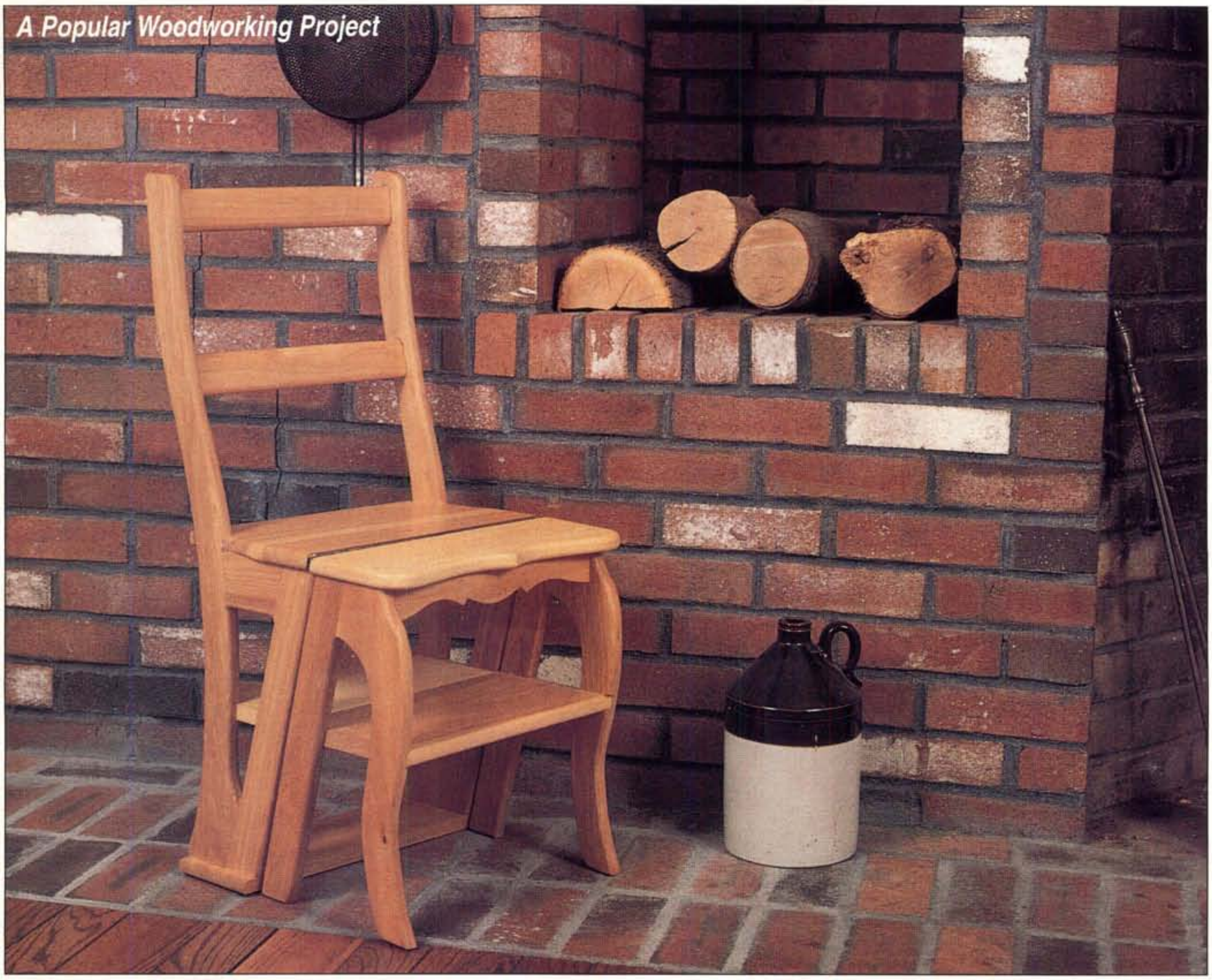
Placement the locating holes is up to you, but I found 2" to be ideal

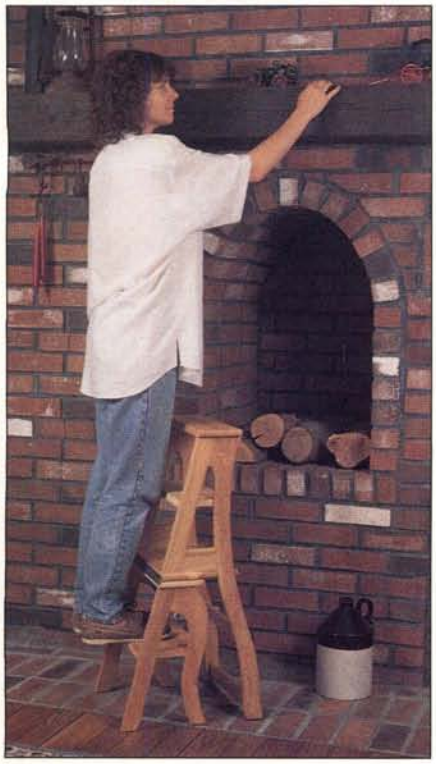


Use the tailstock as a guide to drill the holes in the bar for the pin.



A Popular Woodworking Project





Chair/ Step Ladder

by B. William Bigelow

The combination of a chair and step ladder are perfect for the kitchen. This project offers extra seating for an unexpected guest and it converts to a step ladder that can reach the highest cabinet in the kitchen.

Making this project is straightforward and easy with the full–sized patterns included in the PullOut™ Plans. The simplest way to make the chair/step ladder is to construct the left and right sides first, then rout the dadoes for the steps through the completed subassemblies (Figure 1). This assures good alignment of the parts and easy construction.

Start by transferring the full–size patterns in the PullOut™ Plans to the stock for the curved back legs (A) and

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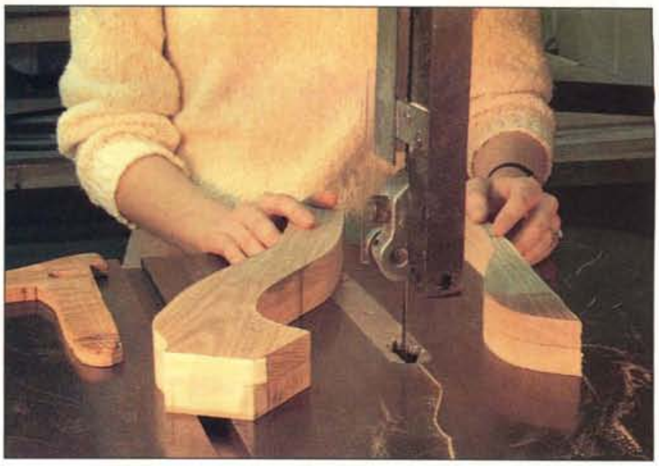
***Bill Bigelow** is a high school woodshop teacher in Surry, New Hampshire.*

Chair / Step Ladder					
Cutting List					
		Rough Size			
Qty	Part	T	W	L	Piece
2	A	¾"	4"	32½"	curved back legs
2	B	¾"	4"	16½"	curved front legs
2	C	¾"	1¾"	15¾"	straight back legs
2	D	¾"	1¾"	16⅝"	straight front legs
2	E	¾"	2½"	4¼"	rails
1	F	¾"	4¾"	15"	seat front
1	G	¾"	9"	15"	seat back
1	H	¾"	1¾"	12½"	front brace
1	I	¾"	7¼"	13"	chair step
1	J	¾"	6"	13"	ladder step
2	K	¾"	2"	14"	back slats
1	L	¾"	5¼"	15"	top step



Bandsaw the duplicate parts together. Save the bandsawn scraps to use as clamping blocks later.

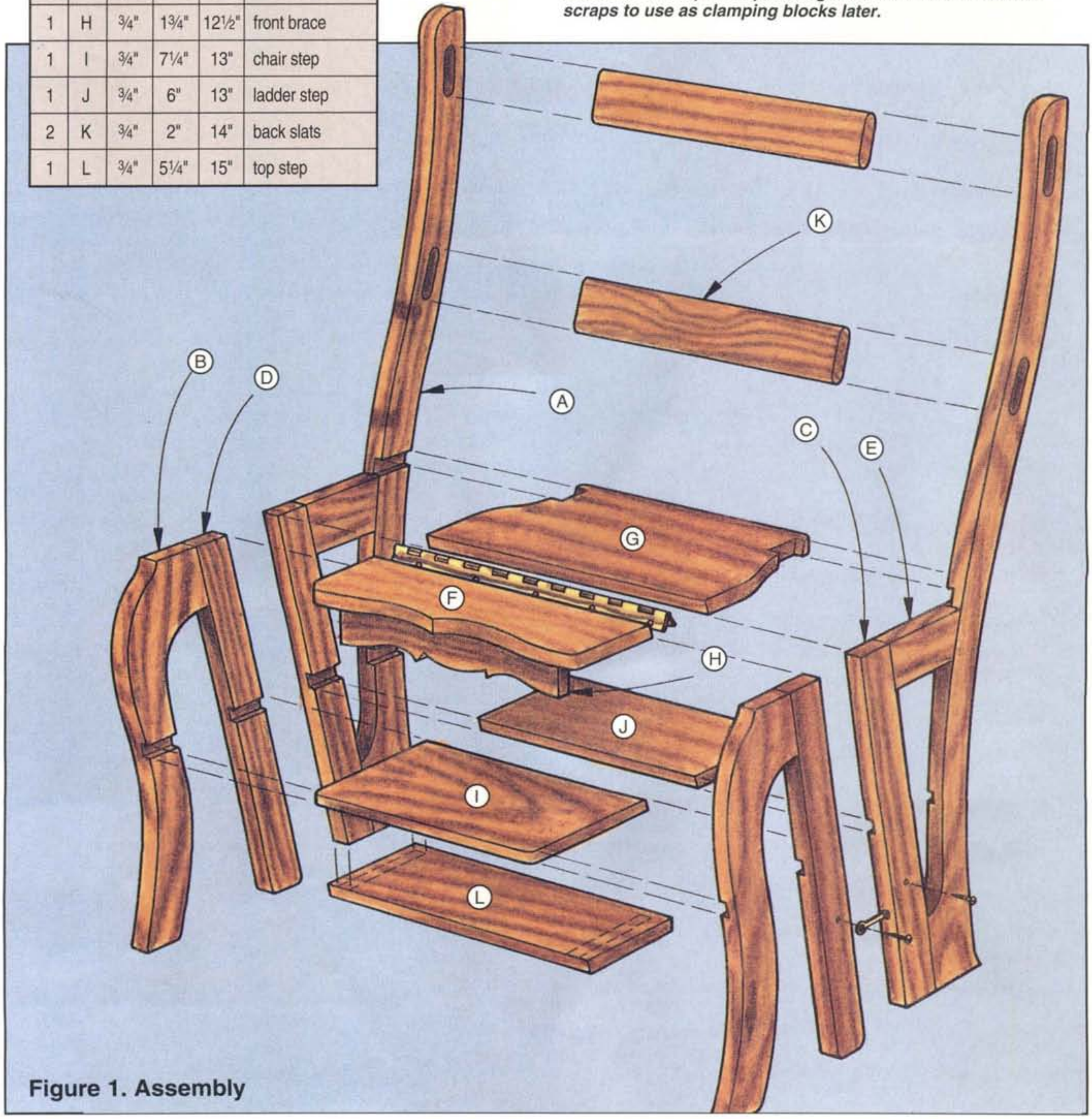


Figure 1. Assembly

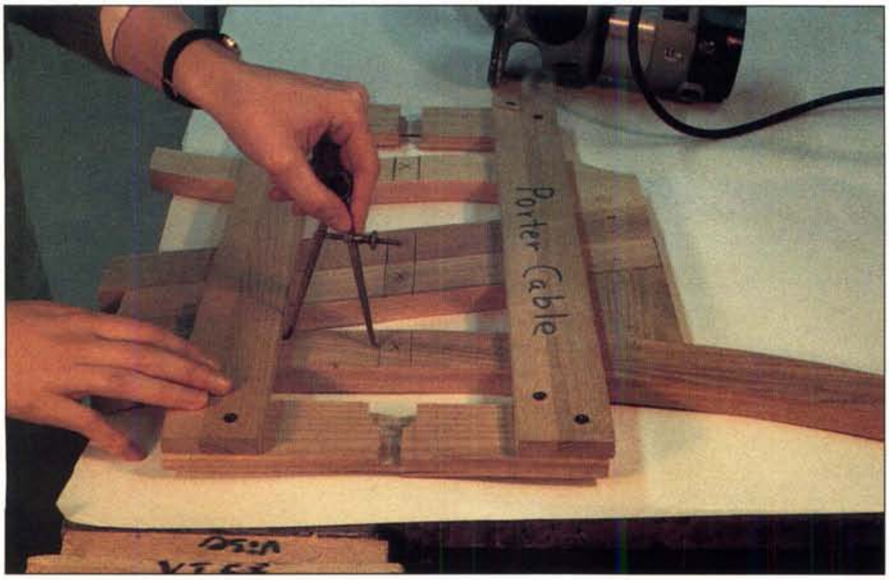
the curved front legs (B). Lay out one blank for each, then tape them to their duplicates so you can bandsaw both simultaneously. Remember that these parts are mirrored lefts and rights, so tape the blanks together with their best sides out. Sand the curves smooth before separating the parts. Make sure the joint areas where the curved back leg joins the straight back leg (C) and where the curved front leg joins the straight front leg (D) are smooth and flat. These areas require close fits and strong glue joints. Save the bandsawn scraps to use as clamping blocks when gluing up the parts.

Rout dadoes in the leg assemblies after clamping the guide track and leg assemblies to the bench.

Glue and clamp the back leg assemblies together using the bandsawn scraps.

The ends of the straight legs (C and D) are parallel to each other and are cut at a 75° angle. The straight back legs differ from the straight front legs only in length as shown in Figure 2. Clamp the curved back leg (A) and the straight back leg (C) together at the bottom (see Figure 1). Do the same with the other ladder side assembly and check that both are identical when clamped up. If the two subassemblies are not identical, sand the joint at the bottom of the curved back leg until the two subassemblies match. The spread from the top of the straight leg to the rear of the curved leg is approximately 8" (outside to outside).

Carefully center the router guide track on a pair of front and rear leg assemblies.



Cut the rails (E) to rough length with one end at 75°. Butt this end against the straight back leg of one of the clamped ladder side assemblies, and trace the curved back leg onto the other end of the rail. Tape the rails together and bandsaw this curve, then carefully smooth the surface where they join with the curved back legs. Set the rails in place and mark the three parts of each ladder side assembly for biscuit or dowel joinery. After cutting biscuit slots or drilling dowel holes and test fitting the joints, glue the four subassemblies together using the curved scrap from bandsawing to hold and protect the parts.

While the glue is drying, transfer the patterns from the PullOut™ Plans and cut out the seat parts (F and G) and the front brace (H). Notch the seat back as

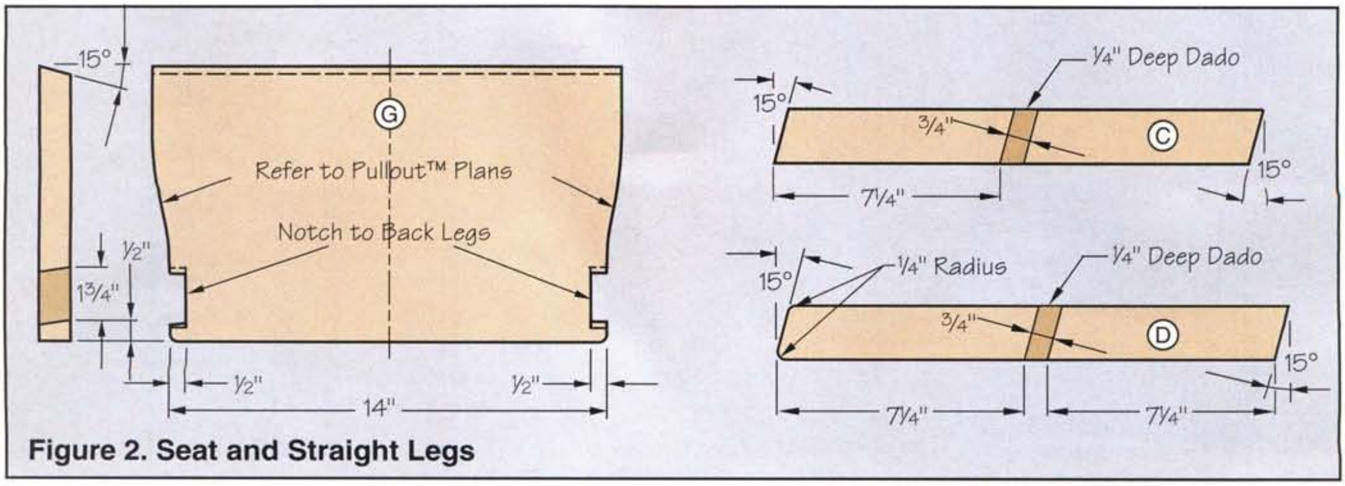
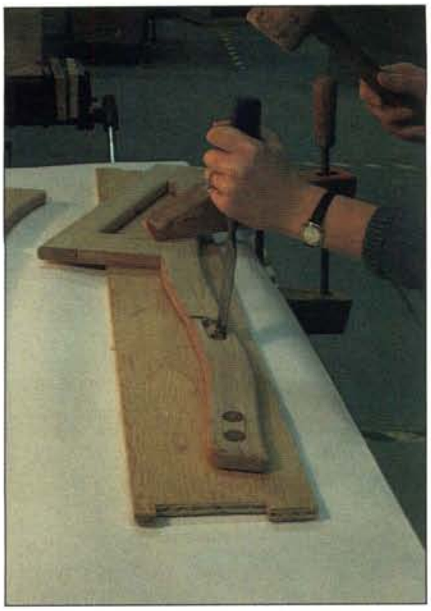


Figure 2. Seat and Straight Legs

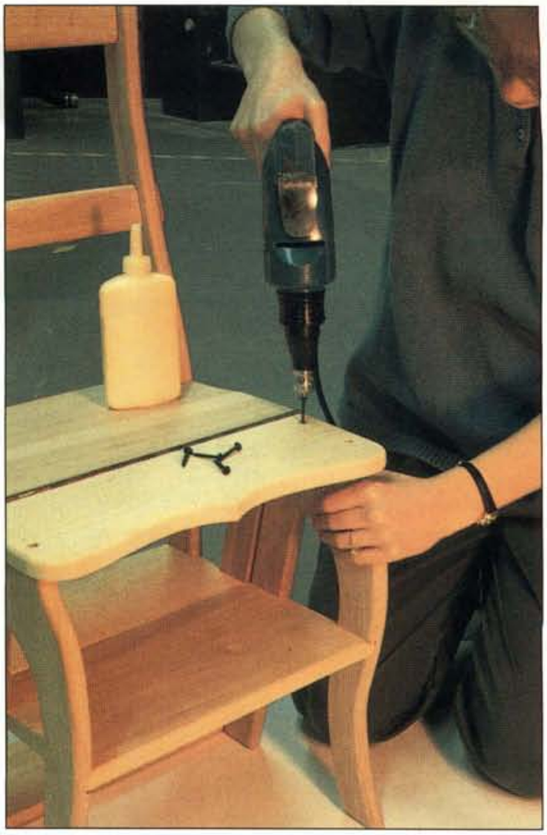


Remove the waste material in the back slat mortises with a chisel.

shown in Figure 2. Bevel the mating edges of the seat parts at 75° before cutting the curved edges. Cut out the steps (I and J) and bevel one edge of each at 75° while you have the table saw set up. Sand all the curves on the seat parts and the front brace, but do not cut the leg notches in the seat until final assembly.

Unclamp the subassemblies when the glue has dried and rout the dadoes for the steps. Use a guide track (see "Jig Journal", *Popular Woodworking*, issue #32, page 45) with your router as shown in the photos above. Lay the two subassemblies that comprise each side of the chair on the bench, inside up, and align them so that the seat part surfaces are in line. Locate and mark the dadoes for the steps, center the router track over the dado marks and clamp the track and the parts firmly to the bench. Use a ¾" diameter straight bit in the router and rout a ¼" deep dado through all four parts of one side of the chair . Repeat for the subassemblies that comprise the other side of the chair.

Before you can proceed with the assembly, you need to cut the mortices for the back slats (K). Cut the back slats to rough size according to the cutting list and round the four edges of each with a ⅜" radius roundover bit. Trace around the end of a back slat to lay out the mortices in the curved back legs (A). Clamp the ladder side assemblies together, and drill through both members simultaneously with a ¼" diameter bit to locate the ends of the mortices; then remove the waste between the holes with a chisel.



Use glue and drywall screws to fasten the seat parts to the leg assemblies.

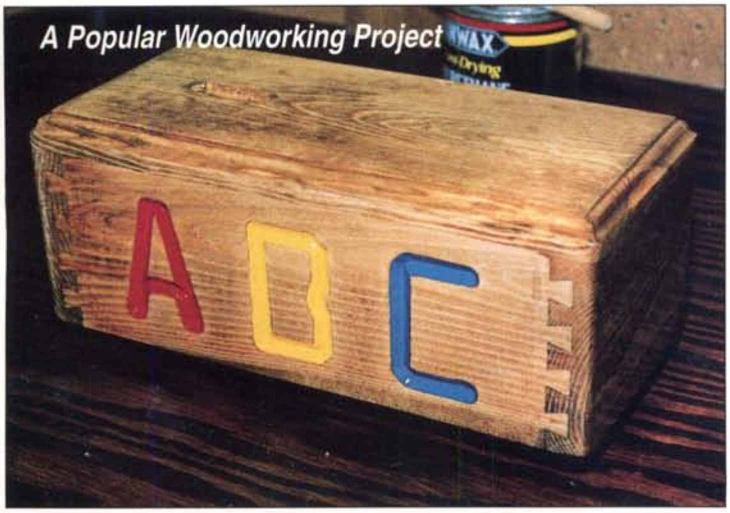
Round over all exposed edges before final assembly. Use a ¼" radius roundover bit and rout all edges of the chair except the ends of the middle steps (I and J) and the edges of the front and back sub-assemblies where the seat parts are fastened.

Use 1¼" drywall screws and glue to assemble the chair/step ladder. Counterbore each screw hole deep enough that you can plug the holes later. Glue and clamp the middle steps (I and J) first, carefully keeping the assemblies square. Cut the notches in the seat back (G) to fit around the curved back legs and screw the seat back to the rails (E) so that its front edge is 1/16" behind the front edge of the ladder assembly. This will provide clearance for the piano hinge that joins the front and back of the chair. Turn the ladder assembly over and fasten the top step (L) in place. Slide the back slats through the mortises in a back leg almost to the other back leg , apply glue and tap the pieces into place. Secure the back slats in the mortises with a screw through the rear of the back leg . Cut the slats flush with the surface of the back legs and hide the screw holes with plugs .

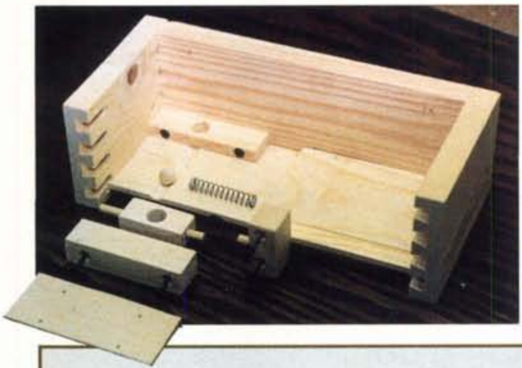
Apply glue to the back slats before tapping them into place.

Join front and back sections together by installing a piano hinge between the edges of the seat pieces.

Join together the front and back sections of the chair/step ladder after fastening the seat front (F) in place . Turn the ladder assembly over into the step ladder position, and install a piano hinge between the edges of the seat pieces. Install a hook and screw eye to keep the chair closed when it is moved. Sand the completed chair, leveling all screw plugs flush with the surface and removing all glue spots. Finish the chair/step ladder to match the decor of the kitchen. PW

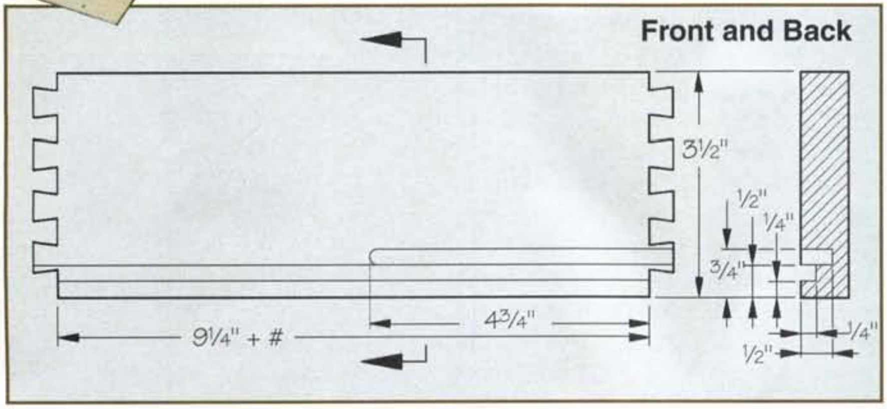


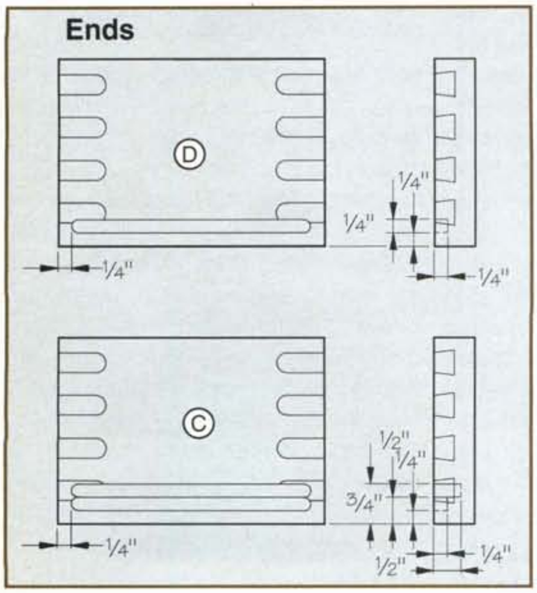
Locking Musical Bank



by Jim Raevis

How many times have you seen your children empty their piggy bank by shaking it upside down, or by pulling off the easy-open door? If your children are anything like mine, I'll bet you've seen it happen all too often. As a result, I decided to build each of my boys a wooden bank with a unique locking feature. The lock might look complicated at first, but once you get started, you'll find that it's not difficult to construct.





A dovetail jig makes the job alot easier than cutting the joints by hand.

The first step is to determine the length of the bank. Take a piece of 1 X 4 and route out the name of the future owner. Leave 1" between the first and last letter and each end of the piece. The minimum dimension for this piece is 9¼". Your front piece may be longer depending on the name you inscribe. If it is longer, subtract 9¼" from your dimension and use this figure as a to-be added-to number on all dimensions indicated by a # in the Cutting List.

Cut the front and back (A and B) to length. Cut the ends (C and D) to the dimensions given in the Cutting List. Select pieces of wood that are as flat as possible, otherwise it's difficult to assemble the dovetailed corners. I designed the bank so that the front, back, ends and cover (A, B, C, D and O) could be fabricated from standard 1 X 6 stock.

For easy identification later, lay the four sides down on your work surface, separating the front and back (A and B) with one end (C or D). Be sure the outside surfaces are face down. Mark the mating ends of each piece with a pencil. This elimi-

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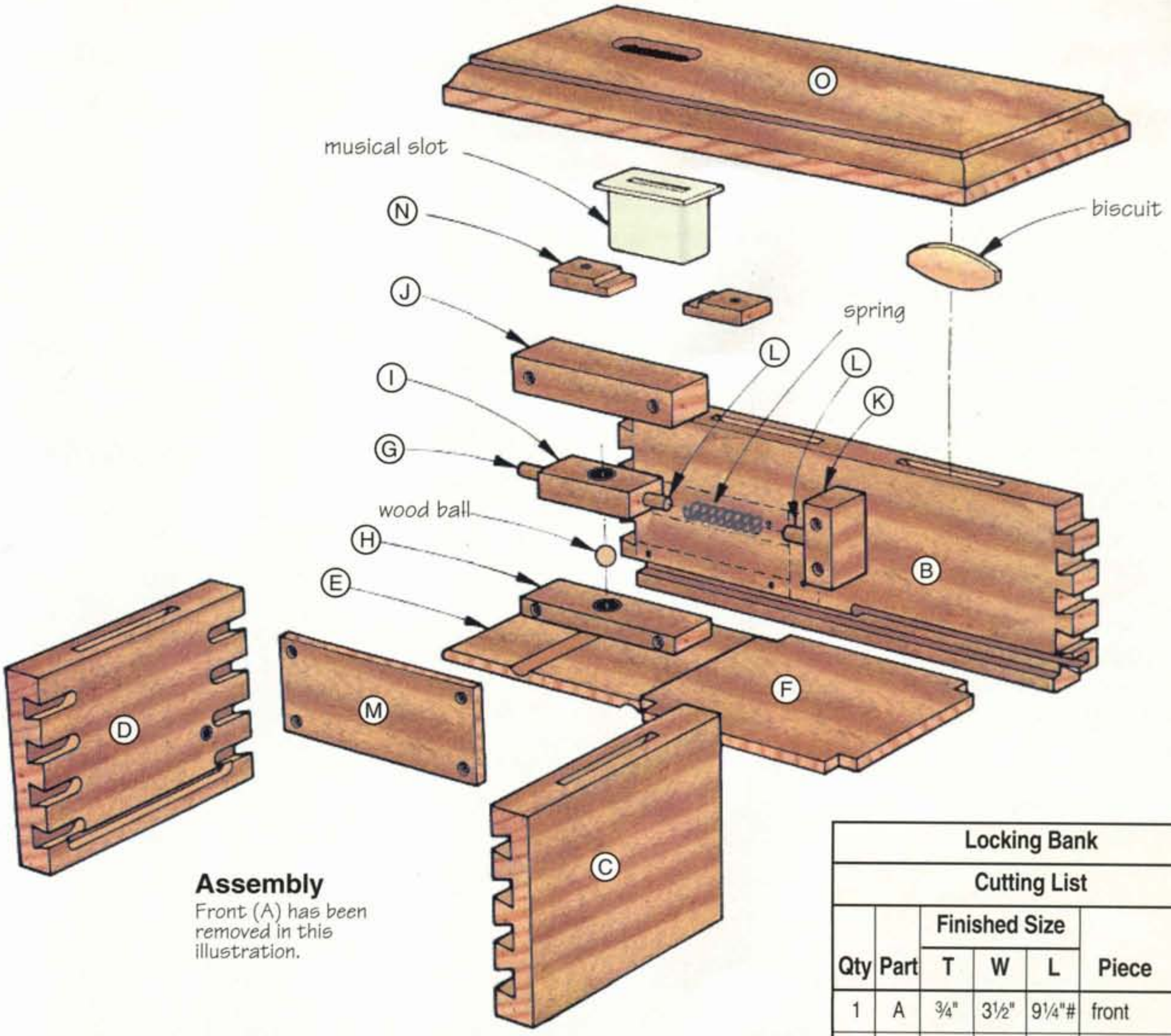
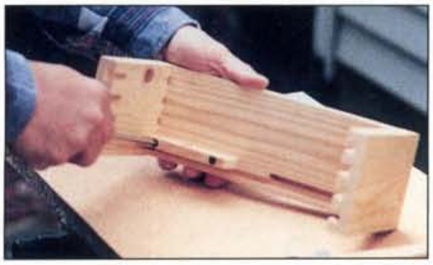
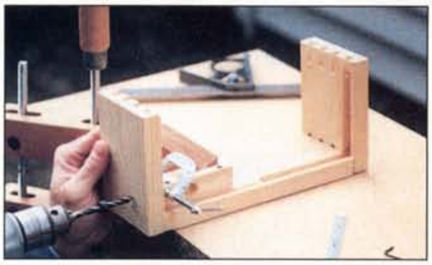
***Jim Raevis** is a mechanical engineer from Fair Haven, New Jersey.*



Assembly
Front (A) has been removed in this illustration.



Drywall screws are excellent fasteners.



Locate and drill the hole for the actuator after installing the complete mechanism.

nates any confusion that might occur later during assembly.

After you've marked the pieces, refer to the figures at left and use your dovetail system to cut the interlocking corners. Next, route the guide tracks for the floor pieces. The guide tracks in the front and back pieces are mirror images of each other. You cannot assemble the sliding floor system if the two parts are identical.

When the front, back and ends are complete, study the Cutting List and figures on the following page then make the sliding floor, fixed floor (E and F), lock parts (G, H, I, J, and M) and two ⅞" long pieces of ¼" dowel (L). Cut the musical slot brackets (N) and the cover (O). Finish the sliding floor parts as shown in the figure on the following page with opposing ¼" radius grooves.

Join the front (A) to the two ends (C and D) with a small amount of wood glue. If all the routing is correct the guide slots match up in the corners.

After the glue has dried, install the lock system. Temporarily put the sliding and fixed floor parts into their corresponding guide slots. Next, take the lock base (H) and position it so that the

Locking Bank

Cutting List

Qty	Part	Finished Size T	W	L	Piece
1	A	¾"	3½"	9¼"#	front
1	B	¾"	3½"	9¼"#	back
1	C	¾"	3½"	4⅞"	end
1	D	¾"	3½"	4⅞"	lock end
1	E	¼"	3¾"	5½"#	sliding floor
1	F	¼"	4¼"	5½"	fixed floor
1	G	⅝"	1"	2"	lock slide
1	H	⅜"	1"	3½"	lock base
1	I	⅜"	1"	3½"	lock cap
1	J	¼" diam		1⅛"	actuator
1	K	¾"	1"	1 13/16"	bolster
2	L	¼" diam		⅞"	spring guide
1	M	½"	½"	4¼"	lock cover
2	N	½"	¾"	1"	m. slot bracket
1	O	¾"	5⅛"	11"#	cover

# see text

Supplies

½" diam. wood ball
musical slot
¼" I.D. X 1¾" spring
Miesel Hardware Tel. (800) 441-9870

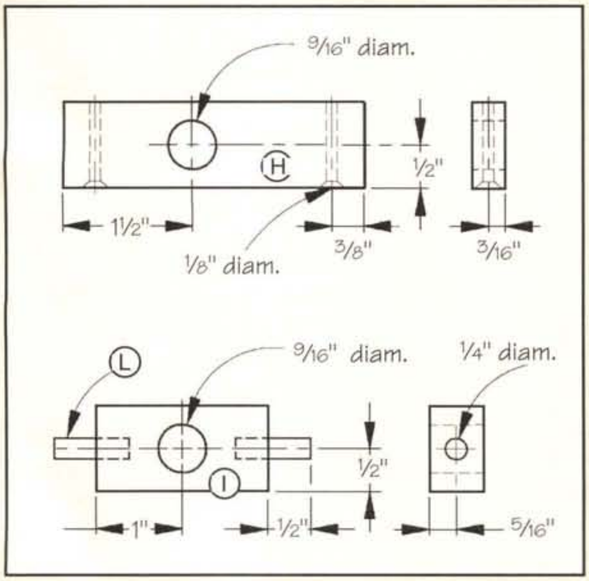
9⁄16" diameter hole is centered above the 1⁄8" deep groove in the sliding floor. For an easy visual check put the wood ball in the hole and look for equal clearance all around. Raise the lock base high enough so the top of the ball is just beneath its top surface. I inserted strips of paper under the lock base to help keep it in position. Once it's located, firmly clamp the lock base (H) to the back of the bank. Remove the temporary paper supports, wood ball, fixed and sliding floor parts, and install the lock base (H) with dry wall screws. Remove the clamp. The lock slide (I) and bank's shell will both be modified now using the shell as a fixture. Place the lock slide on top of the lock base with the dowel pointing away from the bank's side.

Clamp the two together insuring that the lock slide is in contact with the bank's side. Carefully measure the distance from the center line of the lock slide to the bottom of the shell and draw a corresponding line on the outside surface of the bank. Repeat the procedure from the front face of the bank to the center line of the lock slide. With a 1⁄4" brad point drill bit, set the depth with a collar or piece of masking tape at 1 1⁄8". Carefully drill through the side of the bank and into the lock slide. Remove the clamp and lock slide. Put a small amount of glue in the lock slide's hole, and insert a 1⁄4" dowel (L) and set the piece aside to dry.

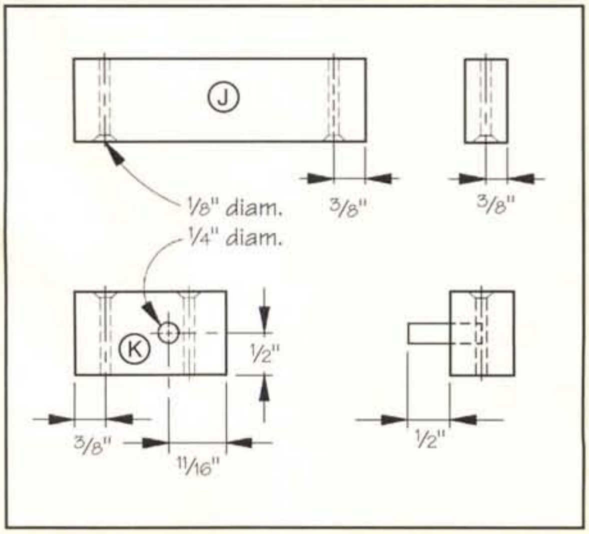
Using a round rasp, slightly enlarge the hole to allow the 1⁄4" dowel to slide freely through it. Then, evenly sand each side of the lock slide so its final width is 15⁄16". This allows the part to move freely when the assembly is complete.

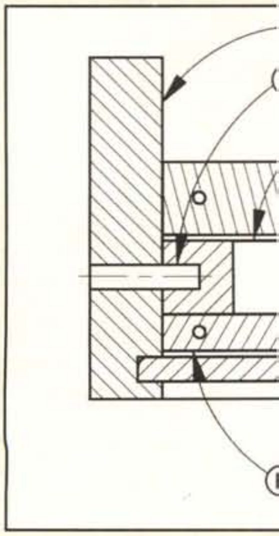
Re-install the modified lock slide so the longer dowel is in the side wall. Put a 1⁄32" spacer on top of the lock slide—use a few strips of paper. Lay the lock cap (J) on top of the paper and securely clamp it to the bank's shell. Remove the spacer and move the lock slide (G) back and forth to ensure that it moves

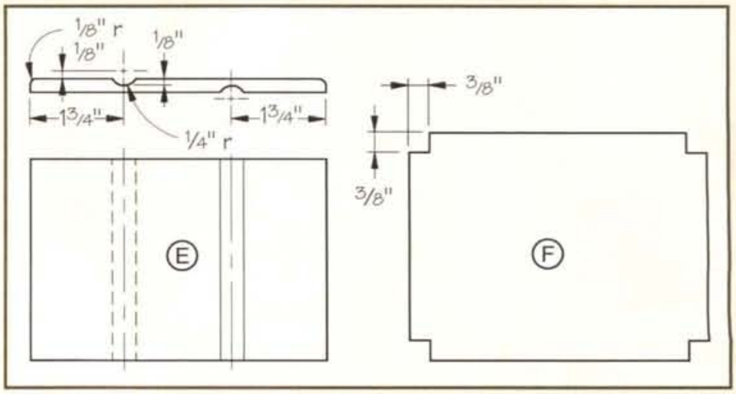
Lock Parts & Floors

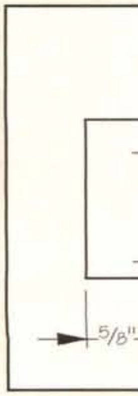


The assembled lock mechanism is shown with the fixed and sliding floors in place.

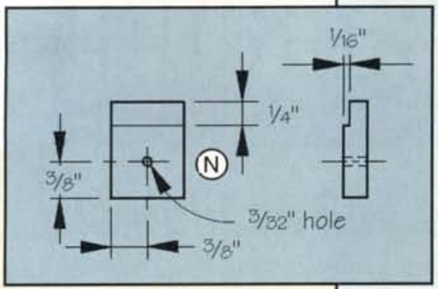


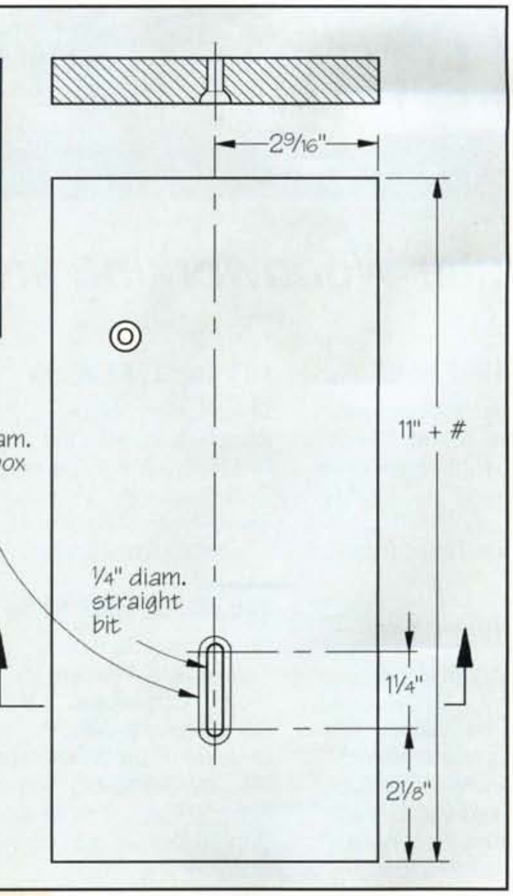


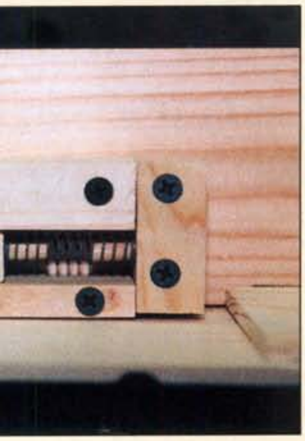


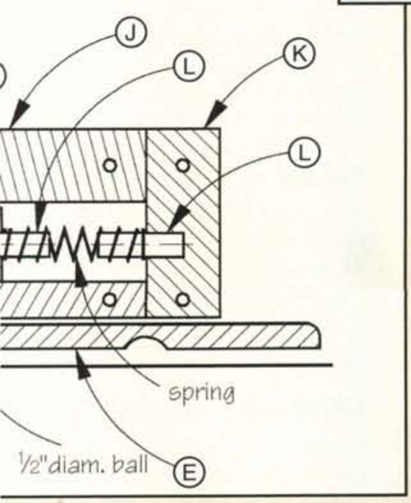


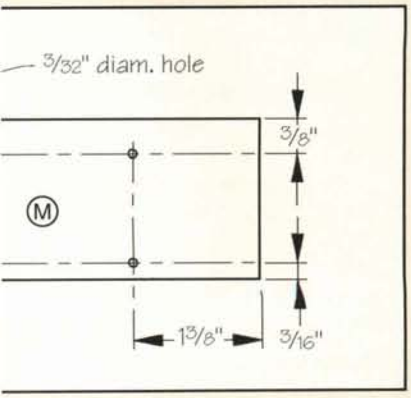
Cover & Slot Brackets











The musical slot will entice the kids to feed the bank for a tune.

freely. Remove the lock slide and install the lock cap (J) with dry wall screws. Remove the clamp.

Reinstall the modified lock slide so the longer dowel is in the side wall. Clamp the lock bolster (K) in place with it's dowel centered in the cavity that supports the lock slide. Check to see that there's a 1/2" space between the dowel ends and install the lock bolster with dry wall screws.

The lock assembly is now almost complete. Compress the lock spring and install it over the two dowels. Turn the partial assembly over, press the lock actuator (G) in, then place the wood ball in the hole. Release the actuator and turn the assembly upright. Temporarily reinstall both the fixed and sliding floor. The lock is now in its unlocked position. Press the lock actuator (G) in again so that the ball falls into the lock base and release the actuator. If all has gone well the sliding floor will not move more than a fraction of an inch. The floor is locked in place by a wedging action with the wood ball. The harder you push, the tighter the wedge becomes.

To unlock the bank, turn the assembly upside down, press in and release the actuator. The ball will fall back into the lock slide. Install the lock cover (M) with four round head screws.

Complete the dovetail joinery. For the next step it's helpful to borrow an extra pair of hands. Install the fixed and sliding floor panels, dab a little glue in the dovetail slots and install the back (B). Ensure that the floor panels are properly seated in the guide slots.

Now install the cover (O) as dimensioned at left. Center the cover with an equal over hang on each of the ends and sides. Make sure that the cover's coin slot is on the same end as the lock mechanism so you can remove the music slot and replace the battery at a later time.

Mark the cover and base assembly, then cut the biscuit slots. Before joining the two, I found that this was the ideal time to install the musical slot (see the parts supply list) in the cover. Simply line the music slot up with the slot in the cover and screw the brackets (N) in place using two #4 X 1/2" RH screws. Put a little glue in the biscuit slots and on the biscuits, and press the cover onto the base. After the glue has completely dried, use a flush trimming bit in your router to remove the over hang from the cover. Then, use a 1/4" round over bit on the edges of the sides and an ogee bit around the perimeter of the cover.

Sand with a medium paper, 120-grit, then finish off with a fine paper—use 240–grit for a very smooth finish. Stain the bank, apply paint in the routed out name and finish with polyurethane.

The last step is the easiest of all—just sit back and look at the smile on your children's face when they receive this special gift. (It's bad luck to give someone an empty bank.) PW

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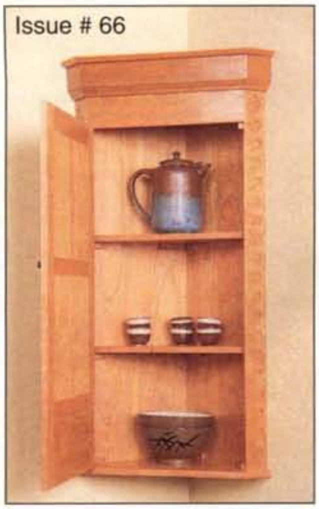

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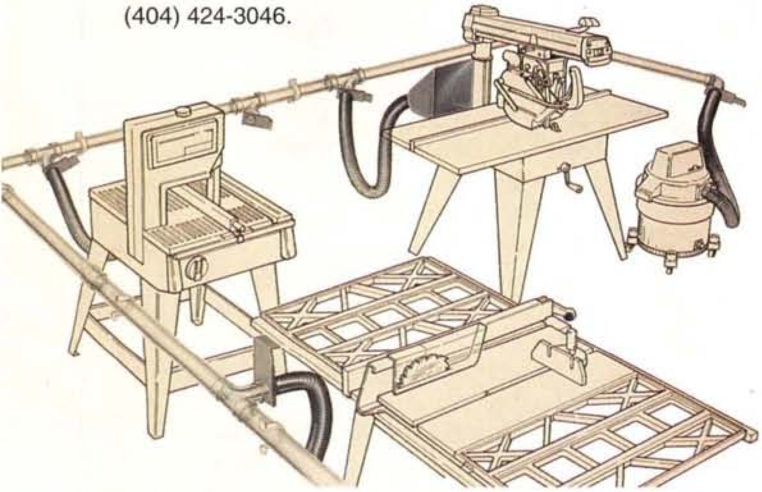
News and Notes

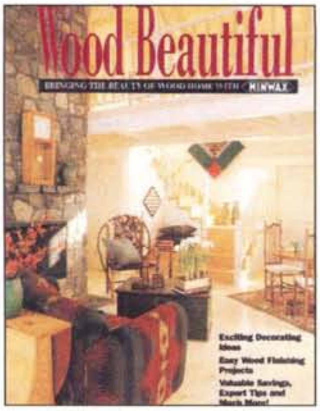
New products to announce? Send a press release and a color photograph to the Editor, Popular Woodworking, 1041 Shary Circle, Concord, CA 94518, and we'll consider them for News and Notes.

There I was at 10,000' heading home in my F4U, when out of the sun...WINGS and WHEELS brings vintage WWII aircraft right to your sidewalk. Designed for 4–7 year olds, this pedal–plane features folding wings, realistic instrument panel and tail wheel steering. Available as blueprints ($21.95+2.50S&H), metal parts ($169.95+12.50S&H), plastic parts ($99.95+9.50S&H) and the full kit ($359.95+24.50S&H) from Wings and Wheels, P.O. Box 2400, Mission Viejo, CA 92690. Tel. (714) 951-5351.

The Saw Trax family of precision saw and router tracking systems has added a new carriage system designed to carry a 10¼" circular saw in any of the Saw Trax models. Tinkerdell Inc., P.O. Box 1170, Kennesaw, GA 30144. Tel. (404) 424-3046.



A new workshop manifold system from Sears assists in controlling and directing sawdust. The system includs eight 3' sections of clear plastic tubing with elbows and five waste gates. The shop dust manifold system, #29964, is available in larger Sears retail stores for around $80.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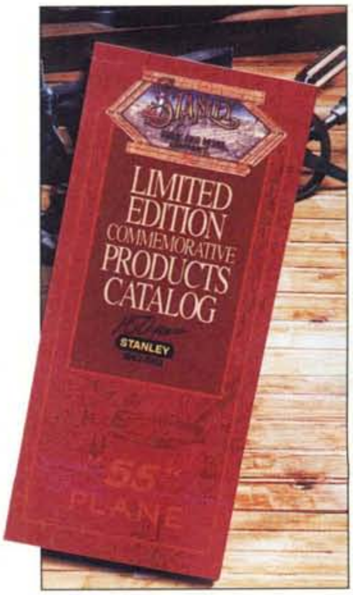
Kimball Machine Co. Introduces the Portable Kr25 Woodcarver for the hobbiest and small sign business. The Kr25 is designed to handle materials up to 1½" thick, and unlimited thickness. The unit comes complete with a ⅝ HP Skil router (for a limited time), carbide bit, template holder and spring–loaded stylus. Two larger models and and accessories are available from Kimball Machine Co., 95 Hathaway St., Providence, RI 02907. Tel. (401) 941-2310.

3M introduces a new 2" sanding/finishing kit. Drill mounted, it can be used for painted surfaces, metal, plastic and wood. Reusable disks switch easily. Available at hardware stores at a suggested retail price of $11.99.

The new heavy duty Saw–Aid features a saw and router depth gauge, 9" rule, 6" hook rule and center finder. A 30°/60° and 45°/90° angle guages. Stots Corp.,10290 Shelbyville Rd., Louisville, KY 40223. Tel. (502) 228-8495.

Ski–Sled Systems is offering a DIY kit which contains four Ski–Sled Struts ($39.95), mounting hardware and easy to follow instructions to build a stearable downhill sled (two kits) and an ice fishing sled. Ski–Sled Systems, Inc., P.O. Box 19013, Minneapolis, MN 55419. Tel. (612) 823-SLED.



Stanley announces it's 150th Anniversary Limited Edition line of hand tools. The commemorative collection includes saws, a tri square, a mallet and wood chisels set, flatblade screwdrivers and more. Original Stanley–Bailey wooden bottom planes — factory refurbished and fitted with a commemorative brass plate are also part of the collection. For a free full–color brochure call Stanley at (800) 486-1697.

Permatex Industrial Corp. has introduced PARR™ Paint and Resin Removing hand cleaner, specially formulated to remove tough–to–remove substances like polyurethane, stain, enamel, varnish, adhesives and sealants without water and without drying the skin. PARR is biodegradable- and not hazaraous like mineral spirits and solvents. Permatex Industrial, 705 N. Mountain Road, Newington, CT 06111. Tel. (800) 828-2524

MLCS specializes in the highest quality carbide tipped router bits and shaper cutters. They offer a wide variety of shaping bits, Forstner bits, solid carbide spiral bits and boring bits to shape any woodworking project, from toys and furniture to cabinet doors and moldings. MLCS, P.O. Box 4053, Rydal, PA 19046. Tel. (800) 533-9298.

Rubbariders™ —toy wheels that look like the real thing. They come in three diameters: 1", 1¼" and 1½". Rubbariders are especially appropriate for toy cars and trucks because the soft rubber never scratches or mars floors. The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55372. Tel. (612) 428-8223.

New Diamond Dry Cutoff Blades from Vermont American are designed to cut masonry block and pipe, brick, concrete, tile, stone and marble in both wet and dry applications. These blades last longer and cut with less effort than standard abraisive blades. For information on these laser–welded, diamond impregnated blades contact Vermont American, P.O. Box 340, Lincolnton, NC 28093. Tel. (704) 736-8013.

Tool Talk **by Sanford Wilk**

1993
Popular
Woodworking
Readers' Choice Awards

the top tools of twenty categories winners

Now for the results of Popular Woodworking's ***Readers' Choice Awards****. From a field of over two hundred, our testers compiled a list of one hundred tools in twenty categories—five tools to a category. From there we left it up to you, our readers, to decide which of the five in each category is the winner. We thank you for taking the time to fill out and send in the voting ballot. Our team spent many hours to let you know the choice tools as selected by fellow woodworkers.*

Sanford Wilk (on right) and a few of the many testers that made this contest possible, confer on sliding miter saws.

To the manufacturers who provided us with the tools to test, we offer a special thanks. It is through the interaction of reader/woodworker and tool manufacturer that better tools can be designed to best fit the needs of those who use them. Those who use the tools know best what works and what doesn't. The manufacturers' engineers profit by your thoughts as much as you profit from using their tools.

As you know, all woodworking tools are not alike. Some cater to the more experienced, while others are designed so that anyone can be adept in their use in a rather short time. Many of the tools you chose as winners were leaders in safety and durability. Others handled a variety of chores with a high level of adaptability (and accuracy) that made working with them easier. For whatever reason you chose your winners, we appreciate your responses. So, without further ado, the envelope please...

Participating Manufacturers: Atlas Copco, Bosch, Bostitch, Campbell–Hausfeld, Carbtech, Dayton, Delta, Devilbiss, DeWalt, Duofast, DML, Elu, Emglo, Freeborn, Freud, General Manufacturing, Granger, Grizzly, Hitachi, ITW Paslode, Jet, Leichtung, Makita, Metabo, Milwaukee Electric, Numark, Passlode, Porter–Cable, Powermatic, Quik Drive, Reliant, Ryobi, SCMI, Sears, Senco, Skil, Stanley, Systematic, TrendLines, Vermont American and Wisconsin Knife Works.

Cordless Drills

DEWALT 945K One champion prize fighter used to have the motto, "Float like a butterfly and sting like a bee." Well, the yellow and black did just that in this category. No wonder, since its 12 volts worth of power comes from premium batteries that handle nearly 1,000 recycles without power loss. It comes standard with a heavy–duty carrying case and boasts a keyless chuck that's among the finest made. There's also the unique benefit of a thing DeWalt calls Versa–Clutch™. It enables this unit to set a screw so delicately that neither the fastener nor the stock is even slightly damaged.

Random Orbit Sanders

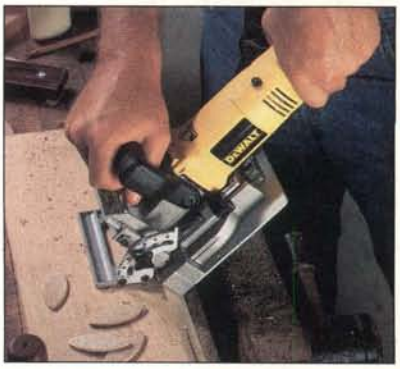
PORTER-CABLE 7336 With an added dust–collection option to its tried–and–true random orbit sander, this manufacturer has taken the blue ribbon away from importers and brought it back home to Jackson, Tennessee. Not only is this machine a variable speed swirl–free dust sucker, but it also acts with such balance that it reminded most of the testers of a ballerina with a motor. To further sweeten the deal, it comes standard with a 6" pad, but easily converts to a 5" disc with an optional kit.

Jig Saws

PORTER-CABLE 7549 Here's another category that this classic woodworking machinery manufacturer swept. You may have chosen this unit for the electronics (I did), or you might have picked it for the gutsy 4.8 amp motor. Perhaps you chose it for the unique guideblock system that turns a tighter corner than a Ferrari. You could have even chosen this machine for the 4–position orbital action or the full 1" stroke. For that matter, you may have picked this machine for its universal blade clamp which eliminates the need for expensive, hard–to–find blade types. It doesn't really matter why you picked it though, since you picked a real performer.

Biscuit Joiners

DEWALT DW682K While it's true that this is the newest kid on the block, its engineers learned by everyone else's mistakes and designed it so that none of the older children would ever kick sawdust in its face. The company's motto is "Guaranteed Tough," and this machine is nothing short of industrial duty. The powerful 6.5 amp motor coupled with a unique fence system is integral and incorporates rack–and–pinion gearing for greater accuracy. The manufacturer installed independent knobs for angle and vertical adjustment. You can clamp the tool to a work surface to turn it into a stationary shop tool. There's also a steel carrying case and dust bag/collection system thrown in for good measure.



Routers

PORTER-CABLE 7539 This is a serious production router with a 3" depth capacity and 3¼ horses worth of motor power. One of the niceties of the tool is the machining. It incorporates a tightly made aluminum motor frame that saves on weight and operator fatigue without sacrificing longevity. That frame is directly mounted to a pair of steel posts that meet with teflon™ bearings to guarantee the smoothest plunge we've ever seen. The unruffled cuts produced by the machine can be attributed to the 5–speed electronics which can spin a bit between 10,000 and 21,000 rpm through almost any wood type.

Router Bits

FREUD ROUTER BITS As you folks already know, the carbide that Freud uses is nothing less than fine. Actually, it's really finer than the naked eye can see. Freud is one of the few bit manufacturers that actually make their own carbide and thanks to tight controls at the factory, the carbide particles themselves are smaller in size. This gives Freud bits a real edge when it comes to longevity. Titanium is added to the binding mixture that suspends the carbide particles, making these bits more resistant to the acids that woods let off while being formed or worked.

Compressors

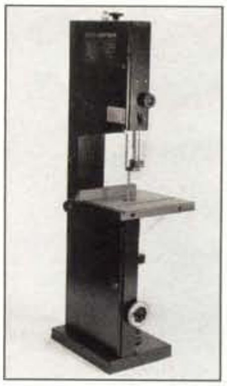
CAMPBELL HAUSFELD CIO53080H True enough, the beauty of this cast iron beast is not just skin deep. This unit offers a low running speed of 700 rpm and high air delivery (18.8 scfm at 90 psi). In addition, it has wrist pin needle bearings, not bushing bearings, which eliminates wrist pin wear. Thanks to the three–phase motor, you get the versatility of hooking the unit up to either 208, 230 or even 460 volts. Also on the list of features are the easy–to–service removable cylinders and the finned copper intercooler which help keep the running temperature low.

Finish Nailers

BOSTITCH N60FN-2 KIT Stanley–Bostitch took their finest finish nailer and packaged it up perfectly for the woodworker. The steel case not only has the space needed to store fasteners and oil, but the manufacturer throws them in to sweeten the deal. We really think that the Dial–A–Depth™ feature alone is worth the purchase price, but with the addition of the angled magazine, the operator ends up with even more control. The quick release nose is also a nice add–on for those rare occasions when you need to clear a jam. Its no wonder that most of the Taiwanese imitations use this nailer as their benchmark.

Band Saws

SEARS 24394 No doubt you folks have been reading the *Tool Talk* column on this one. We gave it a blue ribbon and you seem to agree with our ratings. This is what Sears gets when it hooks up a 3 hp, 13.4 amp motor with an oversized work surface (23½" X 21½") and multiple speed range (270, 700, 1480 and 3800 fpm). The housing is made of unitized steel and the machine takes blades from 3⁄16" to 1" wide. The wheels themselves are dynamically balanced and are made of cast aluminum for a long, wobble–free life. Though it operates on 240 volts, the extra cutting power is well worth the cost of an additional plug in the shop.



Drill Presses

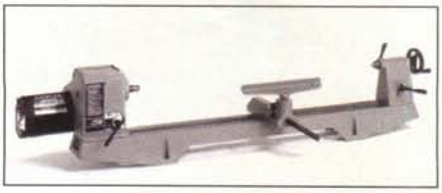
DELTA 11-090 It's no secret why Delta swept this category and took the prize. This one–of–a–kind tool hasn't even found its way past the import knock–off engineers. While it may be a real pain to the Taiwanese, it's a blessing to the woodworker. You get five spindle speeds, a ½" chuck that's extremely well made and offers incredible gripping power, a ram that travels almost 12" in both directions (equaling 16" worth of capacity), and a head that swivels a full 360° around the column if you want to get off of the table. Speaking of the table, you can replace the cast–iron job with an optional wooden–fiber top that's more forgiving.

Jointers

SEARS 20651 This is the largest of the entire Sears line of jointers. With its 476 pounds of mass, it offers some serious capacity to the woodworker. Large cast–iron wheels easily adjust the 88" worth of table and work surface. The infeed side offers a positive stop at ⅛" for those standard but predictable cuts. For power, you're talking a stately 1½ hp motor that runs on 230 volts at 3450 rpm. Magnetic contactor controls add to the overall safety ratings, and even the cast–iron fence is sweet, with standard adjustments at 90° and 45° left and right, not to mention the ability to adjust for blade wear. Sears figured that you might churn up some shavings with this fine machine, so they added a 5" port for dust collection.

Lathes

DELTA 46-700 One good turn deserves another, and after just a short time on the market, you rewarded the Delta engineers for their brilliance. This benchtop unit offers true variable speeds ranging from 500 to 2000 rpm, with a 12" capacity. We took a particular liking to the nifty head that pivots 90° to the bed. You can turn bowls up to 16" in diameter and that's far more than other benchtop machines can offer. For easy adjustments, there's quick–release levers that make moving the tool rest and tailstock a breeze. The micro–adjustment for the live center on the tailstock is reminiscent of larger machines, and the tailstock also has an integral feature that allows the user to accomplish long hole boring procedures that are typically restricted to high priced lathes.



Scroll Saws

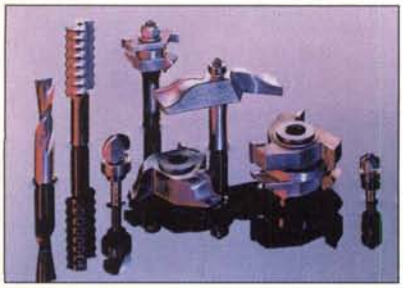
DELTA 40-560 In 1923, Delta Specialty Company invented the first scroll saw. It was the manufacturer's first true winner. The bulky, blade–changing nightmare commonly found on machines that cost this much has been replaced with an ingenious Quikset™ release mechanism. By incorporating pivoting chucks of Delta's own design, the operator can turn what was a difficult process into just a few seconds of ease. Even those nasty internal cuts don't seem so bad when you consider how fast a blade can be threaded on this machine. The pluses keep adding up with features like 16" throat capacity, a well machined circular table and a heavy duty cast iron frame for vibration reduction.

Sliding Miter Saws

DELTA 33-060 The threat to the Japanese manufacturers of sliding compound miter saws is real, and it's coming from Delta with the introduction of their new Sidekick™ line. This particular unit is as comfortable resting on sawhorses in the back yard as it is bolted to your benchtop. A powerful 12 amp motor makes easy work of the most difficult hardwoods, and if you're looking for high capacity, then the 12" cut (at 90°) offered by this superslicer is right where you should focus attention. The rear fence is machined sweetly, and all of the glitches associated with the early Sawbuck™ fence designs have been eliminated. All you get here is accuracy, power, and an elctronic blade brake that stops on command.

Shapers

DELTA 43-355 Here again, unique innovation eliminates the competition. This machine has power enough for almost any application, thanks to the 1½ hp induction type motor, but it also offers some intricate gentility to go with all that brawn. When you take a close look at the fence, you'll notice that it conforms right around the shape of the cutter head. We feel that this unusual fence strengthens the shaper's case for better safety well beyond the typical fence while it also helps to improve chip collection. There's a hand wheel for cutter height adjustment located up front where you need it. The double ended spindle is made from one solid piece of steel for reduced vibration and better accuracy.



Shaper Knives

BOSCH SHAPER KNIVES This well known manufacturer of bits, knives and tools has earned a reputation that exceeds and overwhelms all other shaper knife manufacturers. Inside the blue plastic box that Bosch cutters come in rests a set of knives that can be resharpened almost indefinitely. These carefully machined cutter heads are dynamically balanced, and when you glance through the Bosch catalog at the over 60 profiles available, your imagination may regress back to the time when you first stepped foot in the candy store. The brazing techniques used to hold the thick carbide knives to the heavy duty body affirms my hope that someone still cares about small details. All Bosch cutters work on both ½" and ¾" spindles.

Table Saws

DELTA 34-444 Some woodworkers insist that a table saw is only as good as its fence and we agree. The Jet–Lock™ and Micro–Set™ fence system lock that comes standard on this saw is a work of art for the accurate of mind. It aligns so quickly that even an amateur moves with professional speed, and mistakes on costly stock are eliminated since the fence gets parallel on even the tiniest of graduations. Under the belly of this saw, you'll find a blade elevation and tilting mechanism that incorporates a rack and worm gear to produce similar accuracy and ease of adjustment. The gearing actually outlives the typical threaded screw and nut arrangement found on saws in this price class.

Saw Blades

FREUD SAW BLADES The radical micrograin carbide on Freud's router bits can also be found on the teeth of their saw blades. Freud has engineered some of the best anti–kickback designs available. Teeth on the many blades are preceded by limiters that hold the maximum tooth bite to its most efficient and least dangerous level. Tooth life is extended with three brazings in place of the typical single metal braze. Freud sandwiches a copper alloy in between the layers of silver alloy where tooth meets blade body. The copper is softer than the silver, so the tooth can flex much better than one brazed with just silver alloy. That flexibility is really helpful since the steel of the body and the carbide of the tooth expand at different rates and a braze that's either too soft or too rigid will result in short blade life.

Thickness Planers

DELTA 22–540 Two carrying handles make this beauty portable, and the 12" capacity makes it the perfect size for the woodshop. Under the cutter belly, you'll find a smooth stainless–steel table platen that takes the friction out of feeding while infeed/outfeed extensions add a little more support for longer lengths. The powerful 15 amp motor turns the cutter head and the feed rollers while it adjusts under load so that the stock leaves the unit with a surface continuity that rivals that of larger machine production. Two knives cut at a silky 16,000 cuts per minute and they are reversible, so you don't need to worry when you nick one edge on Sunday night after the local woodworking supply closes. Those same knives, neatly set just .065" beyond the cutter head, aid in the reduction of noise and kickback.

Most Revolutionary

PORTER-CABLE 7116 We've test run all of the dovetail jigs currently available on the market and like you, our conclusion about the new 24" Omnijig™ is that it's tough to beat. To begin with, the cam action of the clamps will uncup just about any piece of stock thanks to their beefy 1¼" steel construction. You can operate the unit without fumbling for controls since the cams work off a single lever pull leaving your other hand free to hold the workpiece. This thing weighs about 60 pounds because there's so much metal in it, and the templates are ¼" thick for longer life and greater accuracy. While other machines fizzle out when you want to mill a board that's thick, the Omnijig™ smiles and can handle stock up to a full 1". All of this and an additional 6" of capacity gave Porter–Cable our vote too. PW

Sycamore

by Ken Textor

If you like to make projects that become conversation pieces, sycamore may be the wood for you. No other tree seems to have more of a historical significance in America—from its roots in the formation of our government to its branches in the historic landing on the moon—than the sycamore.

Sycamore has a lot going for it. But you have to be careful you're getting the genuine article, particularly at the price this wood commands.

General Description

American sycamore (*platanus occidentalis*) is also known as buttonwood, button–ball tree, lacewood and plane tree, as well as just plain sycamore. But don't ask for plane tree or just sycamore to describe it. You may get an entirely different wood.

The confusion over American sycamore comes from England with some help from the Mid–east. The English sycamore is actually a maple. There is a real English sycamore, but it's known as the London plane tree. The American sycamore is often incorrectly identified as a maple too, probably because Indians once boiled its sap to get a very low grade syrup. The Greek sycamore (plain old "plane tree") is a different species of the American version, but in the same genus. Thoroughly confused? Just specify American sycamore.

American sycamore is fairly easy to identify in its native habitat, which is east of the Mississippi. It is found mostly in the nation's midsection for several hundred miles on either side of the Ohio River eastward to the Atlantic coast. Its whiteish bark is relatively smooth and falls off the tree in large hunks. The leaves can be huge, measuring up to 12". Its seedbearing fruit is a small round ball (1" in diameter) that usually hangs onto the tree through winter—hence the name buttonwood or button–ball tree.

Once started, American sycamore is tough, it grows wherever there's a good supply of water, reaching heights over 100 feet with a huge trunk. Unfortunately, this trunk often rots from the inside out. That doesn't kill the tree, but it does make it common to see a 200 year–old sycamore with a cavity big enough to fit a couple people in it. This characteristic is the source of many legends and foolishness, such as seeing how many people you can get into a sycamore trunk.

The wood itself is beautiful and tough. Heartwood is reddish brown with increasingly lighter shades until you get to a nearly pinkish cream–colored sapwood. But the figure supersedes the color's attractiveness. It often appears lacy, hence the nickname lacewood, which should not be confused with the true tropical lacewood. The figure can also appear mottled or curly, somewhat similar to some maples — thus the further confusion with maples. The technical name for these grain patterns is "ray fleck."

The varied figure comes from a tightly interlocked, closed grain, making sycamore wood tremendously resistant to splitting. The best figure comes from quarter–sawn sycamore as the wood is only moderately heavy, hard, and stiff. Its tendency to shrink and move is average, on about a par with maple. Sycamore is considered a poor wood for bending.

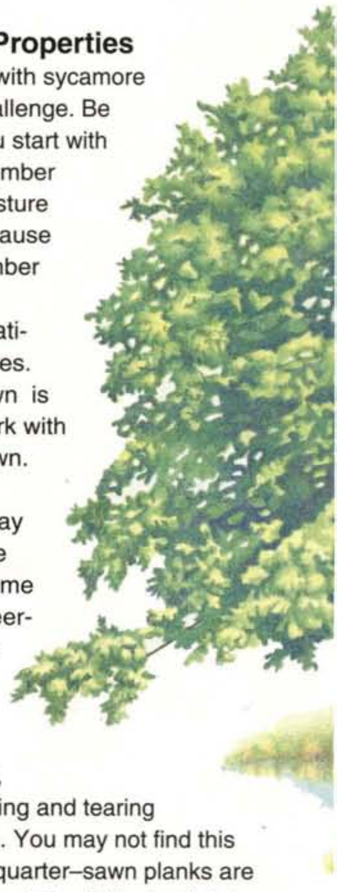
The wood is more prone than most to rotting and should never be used outdoors or in damp areas such as a bathroom. This tendency to rot makes it also likely that the sycamore available to you may have some staining in it. If caught in the early stages, this should not affect the wood's integrity and can enhance its beauty.

Because of its figure, much of sycamore is cut into veneer and is therefore found in many types of furniture. But solid sycamore is also used in flooring, butcher blocks, tool handles, slack cooperage, decorative boxes, pallets, kitchenware, cart wheels, drawer sides, artistic sculpture and decorative panels.

Working Properties

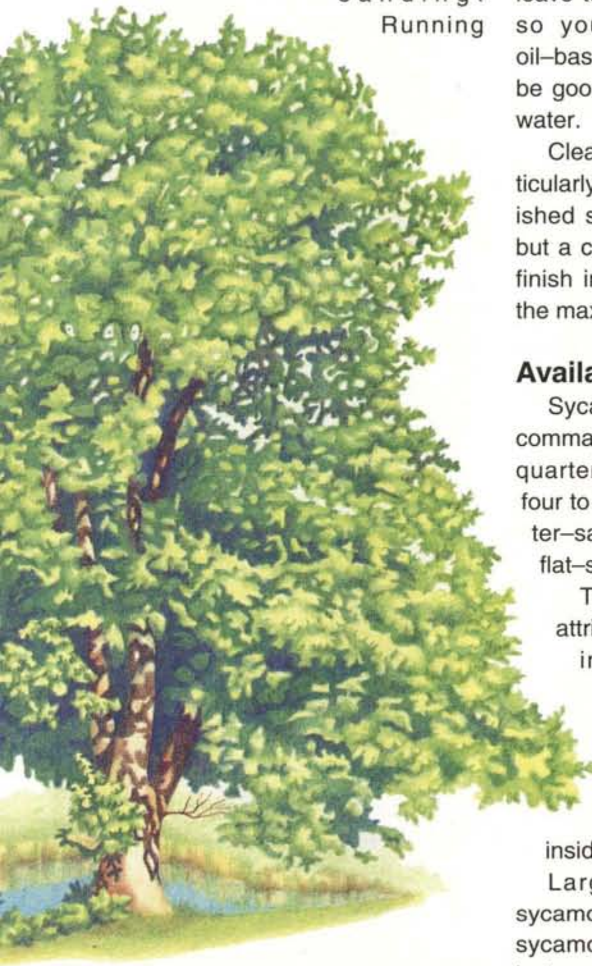
Working with sycamore can be a challenge. Be sure that you start with well–dried lumber (8–12% moisture content) because greenish lumber can change shape dramatically as it dries. Quarter–sawn is easier to work with than flat–sawn.

Planing sycamore may require some patience. Some wood engineering manuals report that because of its interlocked grain, planer chipping and tearing are common. You may not find this to be true if quarter–sawn planks are used. Another help will be to stick to taking only small amounts of wood (1/32 to 1/16) in each pass through the planer.



Still, you may get some rough surfaces where one layer of grain runs contrary to another. You may find it best to use a hand scraper to smooth these spots out. Trying to sand them out may leave a noticeable sanding dip. Otherwise, sanding is fairly straightforward. Dips and burns are not a problem. Both cross–cutting and ripping leaves a clean edge. Scoring is unnecessary. You'll be surprised at the lack of dust created by sycamore in all operations, and the wood has no distinctive odor.

Turning and shaping sycamore produce fair results, though here again some wood manuals report unsatisfactory results. The wood comes off the lathe somewhat chunky, leaving a rough surface that needs sanding. Running sycamore through a shaper or router with shaping bits tends to split and tear it, creating a lot of waste wood and only a few usably shaped pieces.



Fastening and gluing sycamore are basically problem–free. Although you should use pilot holes of the correct size when screwing or nailing, the wood is actually very forgiving. Its ability to resist splitting when pilot holes are not used, even at the very end of a board, is a marvel. Lubricants for the fastenings are not necessary and all glues work well with the wood.

Finishing

Most people will agree that this wood is too beautiful to consider anything but a clear finish. The best choice may be a clear acrylic, polyurethane or clear shellac because they will not yellow as much as a varnish. The water–based polyurethanes seem to leave too much of a milky appearance, so you may want to go with an oil–based polyurethane. Shellac would be good on any surface that won't see water.

Clear waxes seem to work well, particularly because of the very smooth finished surface you get with sycamore, but a clear wax lacks the depth a hard finish imparts, thus failing to bring out the maximum effects of the figure.

Availability

Sycamore is a rarity, so it tends to command a hefty price, particularly for quarter–sawn planks. Expect to pay four to six dollars a board foot for quarter–sawn and about a dollar less for flat–sawn.

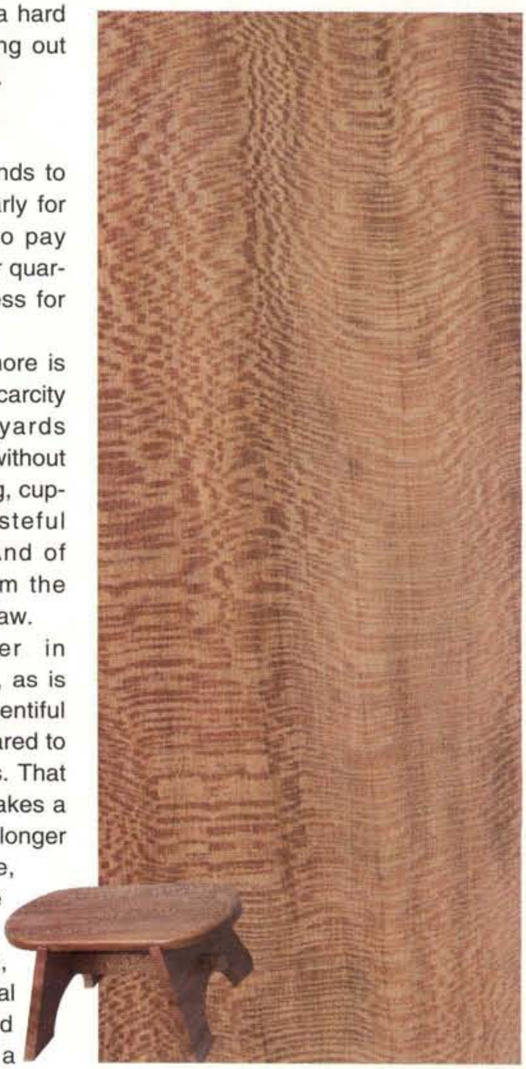
The higher price on sycamore is attributable to more than its scarcity in the woods. Lumber yards report it is difficult to dry without a lot of warping, sweeping, cupping and other wasteful changes in the kiln. And of course, that rotting from the inside out makes it difficult to saw.

Large dimensional lumber in sycamore is virtually unheard of, as is sycamore plywood. Veneer is plentiful but as with solid lumber, be prepared to settle for relatively narrow boards. That tendency to rot inside the tree makes a board 12" or wider rare. Boards longer than twelve feet are also scarce, also because of the way the tree tends to grow.

Beyond its obvious qualities, though, if you need conversational topics to go with your finished sycamore project, this wood is a standout. Sycamore seeds went to the moon on one of the Apollo missions and were later planted around the Houston Space Center. The nation's first corporate stocks were said to be traded in the shade of a buttonwood tree near Wall Street in the late 1700's and Rhode Islanders, discontent with the elm as the nation's Liberty Tree, bestowed that honor on a sycamore. Historians note that Washington met Lafayette under a sycamore tree, and even the Bible mentions the tree whose leaves allegedly clothed Adam and Eve after their eviction from Eden.

So it's safe to say, that your sycamore project is more than just another pretty face; it's a great conversationalist too.

***Ken Textor** works wood and writes about it in Arrowsic, Maine.*



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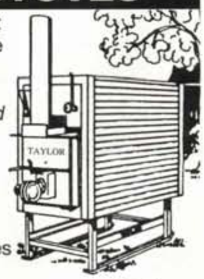

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Calendar

If your group is having an event you would like other woodworkers to hear about, please send us all pertinent information at least three months before the opening date. We will publish it for you in *Calendar* free of charge.

California

CAFAM: Cultural Tour Of Costa Rica: (3/12-19) 6067 Wilshire Boulevard, Los Angeles, CA 90036

Contact: Jean Miao, Tel. 213-937-5544

Woodworking Show: (4/16-18) L.A. County Fairplex, Bldg. 6 White And McKinley Aves., Pomona, Ca 91768

Contact: The Wood Working Shows, Tel. 310-477-8521, FAX 310-312-6684

Woodworking Show: San Jose Civic Auditorium, Exhibit Halls A and B, Park Ave. And So. Market Street, San Jose, CA 95113

Contact: The Woodworking Shows, Tel. 310-477-8521, FAX 310-312-6684

Annual Student Exhibition: (5/15-6/6) Highlight Gallery, 45052 Main Street, Mendocino, CA 95437

Contact: Tel. 707-937-3132

Colorado

Wood Carving Festival: (7/16-25) 2613 Alteza Lane, CO 80917

Contact: Secretary Don Yates, Tel. 719-574-832

Delaware

"Art From The Lathe": (4/22-24), Hagley Museum and Library, Wilmington, DW

Contact: Dorothy Lehr, Public Relations Coordinator, P. O. Box 3630, Wilmington, DW 19807. Tel. 302-658-2400

Florida

Woodworking Show: (3/5-7) Civic Auditorium Exhibition Hall, 300 Water St., Jacksonville, FL 32202

Contact: The Woodworking Shows, Tel. 1-800-826-8257

Woodworking World Show: (3/26-28) Orlando Centroplex Civic Center, Livingston Street, FL

Contact: Woodworking World Show information line at Tel. 1-800-521-7623

Georgia

Woodworking Show: (3/12-14) Gwinnett Civic Center, 6400 Sugarloaf Pkwy., Duluth, GA 30136

Contact: The Woodworking Shows, Tel. 1-800-826-8257

Illinois

Woodworking Show: Odeum, North Hall, 1033 N. Villa Ave. IL 60181

Contact: The Woodworking Shows Tel. 1-800-826-8257

Indiana

Woodworking World Show: (3/19-21) Allen County Memorial Coliseum, 4000 Parnell Ave. Fort Wayne, IN 46805

Contact: Woodworking World Show information line at Tel. 1-800-521-7623

Maryland

Woodworking World Show: (4/2-4) Picksville Armory, Picksville, MD

Contact: Woodworking World Show Information line at Tel. 1-800-521-7623

Massachusetts

Woodworking World: (4/16-18)The Host Inn/ Sheraton, Boxboro, MA

Contact: Woodworking World Show Information line at Tel. 1-800-521-7623

Michigan

3rd Annual Woodworking Show: (4/30-5/2) 1120 West State Fair, Detroit, MI

Contact: Woodworking World Show Information Tel. 1-800-521-7623

Timber Framing Workshops: (6/6-12) Two Concurrent Sessions, Timber Framing Inc., P.O.Box 26 Blissfield, MI 49228. Tel. 517-486-4355 FAX: 486-2056

Minnesota

Wood Carving Workshop: (8/8-14) Villa Maria Retreat Center, Old Frontenec, MN.

Contact: Villa Maria Wood Carving Workshops, P.O. Box 37051, Minneapolis, MN 55431

Missouri

Woodworking Show: (4/2-4) American Royal Center, Governor's Building,1701 American Royal Ct., Kansas City, MO 64102

Contact: The Woodworking Shows at Tel. 1-800-826-8257

New Jersey

Woodworking World Show: (4/23-25) National Guard Armory, Grove Street and Park Blvd., Cherry Hill,NJ

Contact: Woodworking World information line at Tel. 1-800 521-7623

Peter's Valley Craft Fair: (7/24-25) Peter's Valley Craft Center, 19 Kuhn Road, Layton, NJ 07851

Contact: Peter's Valley Craft Center, Tel. 201-948-5200

Assistantships: (6-8), In blacksmithing, ceramics, fibers, fine metals, photography and woodworking.

Contact: For application, send name and application to Peter's Valley Craft Center, Assistantship Program, 19 Kuhn Road, Layton, NJ 07851, Tel. 201-948-5200

New York

The American Association Of Woodturners Association Seventh National Symposium: (6/25-27) State University of New York at Purchase, NY three miles east of White Plains, New York.

Contact: American Association of Woodturners Mary Redig, Administrator, 667 Harriet Ave., Shoreview, MN 55126, Tel. 612-484-9094

North Carolina

Country Workshops: (3/22-27) Advanced Windsor Chair making. 4/5-9 Swedish Woodenware. John C. Campbell Folk School, 90 Mill Creek Road, Marshall, NC 28753.

Contact: Tel. 704-656-2280

Folk School Workshops: (3/7-13) Woodworking Shaker, (3\14-20) Woodworking Mountain Dulcimer, (3/19-21) Woodcarving-Mountain Animals, (3\21-27) & (3/4-3) Woodcarving Basics, (4/4-9) Woodcarving-Carve A Dog, (4/4-9) Woodworking-Shaker Rocker, (4/11-16

Woodturning Bowls/Vessels, 4/18-23)
Woodcarving-Human Figure, (5/9-15)
Woodcarving Spoons, (5/9-15)
Woodturning Bowls & Spindles, at the John C. Campbell Folk School.

Contact: The John C. Campbell Folk School, Rt. 1. Box 14A, Brasstown, NC 28902. Tel. 1-800-Folk Sch

American Craft Showroom: (4/15-23) International Home Furnishings Market, High Point, NC

Contact: The Rosen Group, Inc., 300 Chestnut Avenue, Suite 300, Baltimore, Md 21211, Tel. 410-889-1320 For travel info. and reservations: 1-800-43-CRAFT

Woodworking Show: (3/19-21) Farm Show Complex, East Building, Cameron and Maclay Streets, Harrisburg, PA 17110

Contact: The Woodworking Shows Tel. 1-800-826-8257

International Lathe-Turned Objects Challenge V: (7/10) deadline for all entries

Contact: For Application send SASE to Wood Turning Center, P.O.Box 25706, Philadelphia, PA 19144 or Tel. 215-844-2188 and FAX 215-844-6116.

Tennessee

Hardwood Workshops: (3/8) Hardwood Flooring, (3/8) Bowl Turning, (3/29) Built In Cabinetry Hardwood Mouldings, Paneling and Built In Cabinetry, (4/12) Designing With Hardwoods.

Contact: P.O. Box 11171, Knoxville, TN 37939 or Patricia Kirk at Tel. 615-637-3332

Spring Faculty and Staff Exhibition: (2-4/18) Arrowmont School of Arts and Crafts P.O. Box 567, 556 Parkway, Gatlinburg, TN 37738-0567

Contact: Cynthia Huff, Communications Coordinator, Tel. 615-430-5860, FAX 615-430-4101

Craft Exhibit: (3-5/93) Arrowmont School of Arts and Crafts. P.O. Box 567, 656 Parkway, Gatlinburg, TN 37738-10567

Contact: Cynthia Huff, Communications Coordinator, Tel. 615-430-5860, FAX 615-430-4101

Germany

World Fair: Wood and Forestry Machinery and Equipment (5/19-25) Hanover Fairgrounds, Hanover, Germany

Contact: Hanover Fairs USA, Tel. 609-987-0092

American Craft Showcase: (8/1) 10,00 International Exhibitors, Frankfurt, Germany.

Contact: The Rosen Group, Inc., 3000 Chestnut Avenue, Suite 300, Baltimore, MD 21211 Tel. 410-889-1320 FAX: 410-889-1320. For travel info. and reservations Tel. 1-800-43-CRAFT

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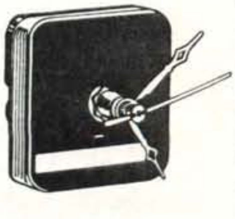

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Out of the Woodwork

by Bryan Mills

Sixth Grade Miracle

In the sixth grade, wondrous visions grasp the imagination. For me, an indelible image formed while watching through the high school shop window. I could see the older students push white pine planks through the circular saw, cut them into heart–shaped table legs on the band saw, and join them to a v–bookshelf under a thick, chamfered top. My insides ached to build a table like that. Later, in middle–age the image and the feeling came back. I'd lost a college teaching job, but I knew intuitively what to do—build fine furniture. My own pace, my own boss, my own style!

"You ever been to Winterthur?" a friend asked.

"No. What's that?"

"If you're going to build fine furniture you've got to go to the Henry Francis du Pont Winterthur Museum here."

Du Pont recognized early on the artistic value of American furniture made before the advent of mass production. He collected the finest pieces until his house in the Delaware woods near Wilmington overflowed. Today its multiple wings hold the finest collection of early American furniture in the United States. A visit reveals refined beauty, first in surrounding gardens, then in the expansive house, and finally, in its contents: fine furniture, rugs, paintings and decorative accessories, all in authentic early American settings.

The museum docent assaulted us with William and Mary, Queen Anne, Chippendale and Federal, ball and claw feet, cabriole legs, pierced splats, carved acanthus leaves on chair knees, and so on. Discussions of design history undertook to explain why a particular chair leg superseded another. Details of heavy Chippendale clock moldings were compared to the lightness of the Hepplewhite. My mind was overwhelmed by the richness and complexity of this new world.

I wanted to build fine furniture but was shocked to find that I didn't really know what it was—a shock, yes, but a beginning too, a first step beyond the kitchen cabinets, bookcases, and table–book racks I had seen through the high school shop window years before. Thus began a quest, still underway after fifteen years, to understand the early cabinetmakers and their exquisite furniture. I devoured books like John T. Kirk's, *Early American Furniture* and Charles F. Montgomery's, *American Furniture: The Federal Period.* Other early American collections commanded my attention, including the Garvan at Yale Museum of Art, those at the Western Reserve Historical Society in Cleveland, the Boston Museum of Fine Art, and the Rhode Island School of Design in Providence. I committed styles and dates to memory, started projects, made painful mistakes, corrected them.

Yeah, I finally solved the problem of getting all the drawers to match.

Eventually I found one that dared me to replicate it. Attributed to Benjamin Frothingham, Massachusetts, circa 1770, the original waited in the Metropolitan Museum of Art in New York City where I went to study it.

"Don't touch!" warned the attendant assigned to monitor me. We were deep in the bowels of the museum where the famous chair had been removed from storage for my study.

"And hurry up!"

A few hours later I had measurements (without touching), photographs and sketches. Manhattan released me alive, the quiet Pennsylvania hills beckoned, and building began. First, full–sized drawings; then construction—difficult without right angles in the design. Last, the big hurdle—the two front cabriole legs had acanthus leaves on the knees and ended with a pierced ball and claw foot.

Seeing a leg in a block of wood isn't easy; trying to created pressure that intensified as carving errors warped the completion schedule required by my mortgage payments. A complex project like this is a stark confrontion with the unknown, a burden carried by many whose livelihoods link directly to the skill of their hands. The suffering is never revealed in the final product.

The first leg–carving wasn't even close; it looked vulgar, hopeless, quite depressing. After that, a white pine block came easier. The curve of the leg emerged along with the knee and foot; then a claw on the foot and leaves on the knee yielded to the carving tools. Hours passed uncharted, my mind void of every thought except the emerging leg. When it finally seemed attainable, joy set in. Now my hands wanted a block of mahogany. I began to think no building project was beyond mastery. Upholstered with crimson damask, the Chippendale mahogany wing chair placed by the side of a colonial fireplace was a lovely sight.

The successful completion of the project marked a turning point in my woodworking career, a miracle of sorts. But, upon reflection, the real miracle is rooted not in the keenness of my eye or the skill of my hands, but in the fact that a sixth grade persisted, steering me when I needed *it most* into a woodcraft vocation. PW

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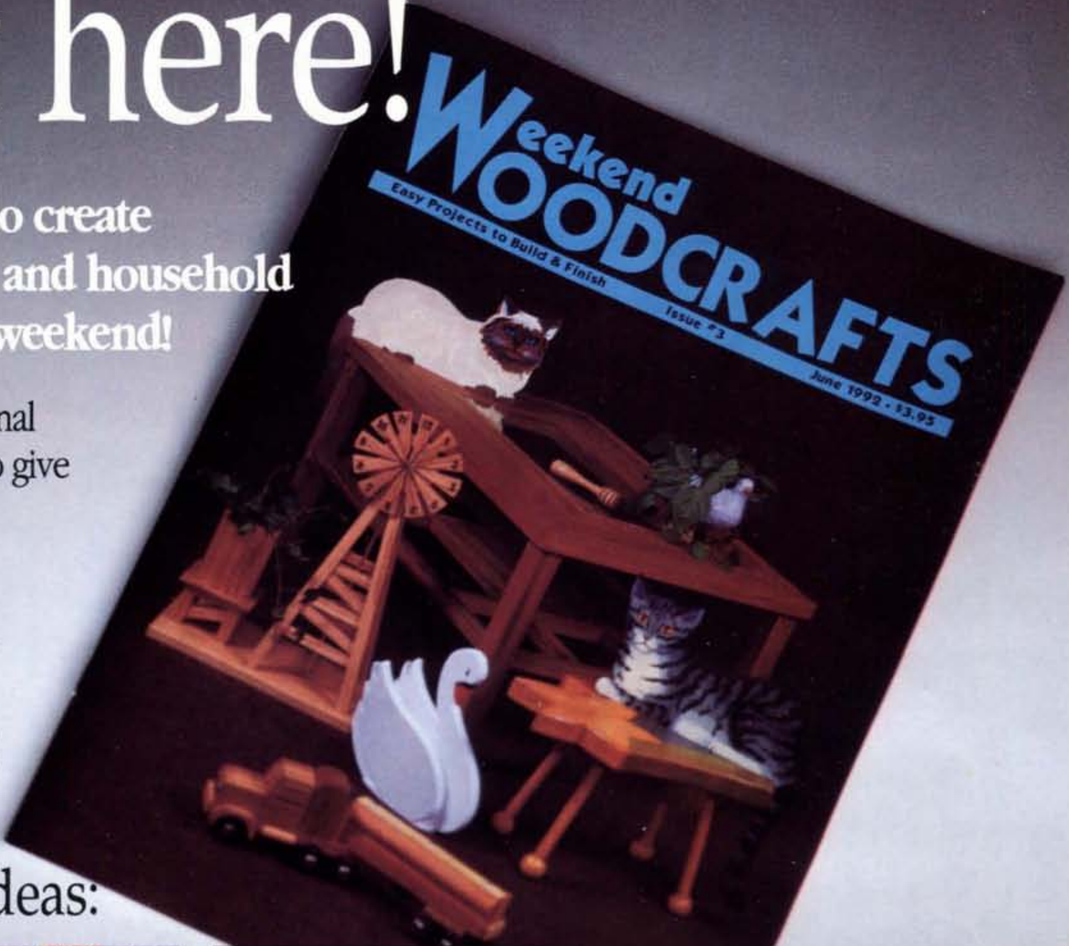

Some of our great project ideas:

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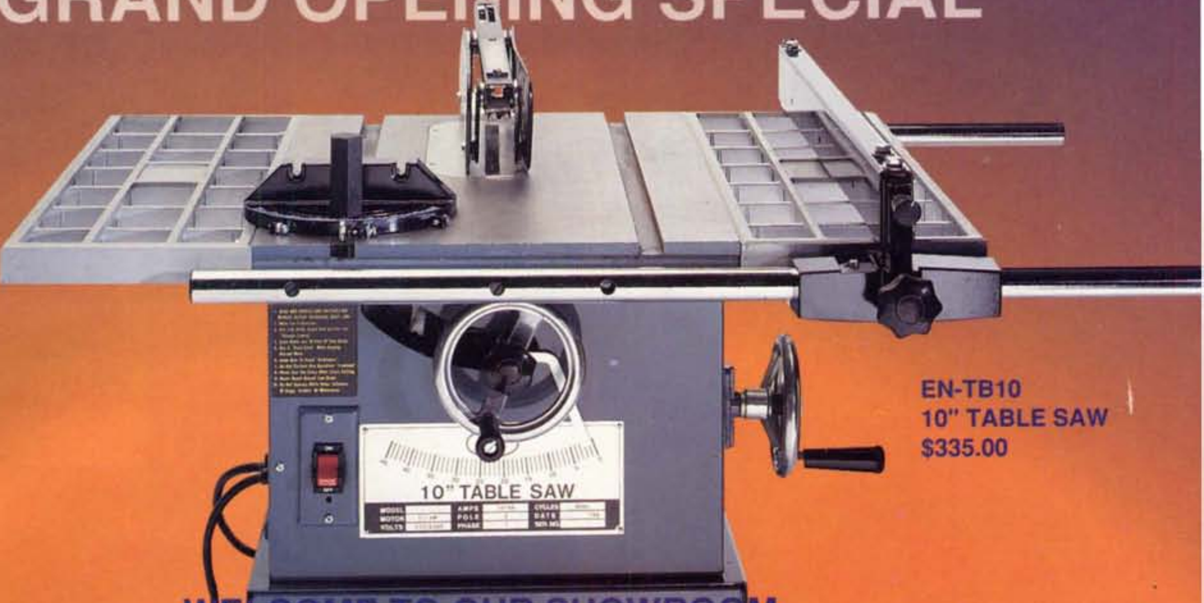

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